

A Work Project, presented as part of the requirements for the Award of a Master Degree in Finance from the NOVA – School of Business and Economics.

AIRBUS SE

In a duopoly with a weakened competitor, Airbus can only be beaten by itself

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Abstract

This Work Project presents a valuation of Airbus SE, an aerospace and defence company. At the beginning of the report an overview of the company's business segments is given. Followed by a presentation and discussion of the aerospace and defence sector including an analysis of the market demand, supply and trend as well as the industry's and company's growth potential. Finally, the valuation itself will be presented. On the basis of a DCF valuation Airbus SE's share price for the target date 31.12.2020 is calculated. A forecast that results in a Buy recommendation for Airbus SE shares.

Keywords

Aircraft manufacturer, aviation, aerospace and defence, rotorcraft

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“AIRBUS SE”

COMPANY REPORT

“AEROSPACE AND DEFENCE”

3 JANUARY 2020

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**In a duopoly with a weakened competitor,
Airbus can only be beaten by itself**

- In the Commercial Aircraft segment we see a high demand for Airbus aircraft especially coming from the narrowbody segment driven by a growing propensity to fly in the emerging markets as well as the ongoing rise of low cost carriers. We believe, this leads to a production rate increase as Airbus offers the most efficient aircraft in this segment. The production rate increase in the narrowbody segment comes with a margin improvement which is supported by the general shift to new engine option aircraft with higher margins.
- Airbus Defence & Space enjoys good long-term forecasts. The top-selling business line military aircraft is expected to grow as a result of a major European defence project. This growth is assumed to be actively supported by the Space Systems segment.
- In the future, Airbus Helicopters will have a broader base and thus has good growth opportunities. In addition to the traditional helicopter business, the company will also focus on its service offerings. The product range will be expanded to include rotorcraft such as unmanned air taxis and high-speed helicopters.

Company description

Manufacturing and designing commercial aircraft, military transporters, helicopters, satellites and launch vehicles as well as other solutions, Airbus is one of the world leading suppliers in the aerospace and defence sector. In order to do this as efficiently as possible, Airbus has divided its business into three units, which are Commercial Aircraft (CA), Helicopters (H) as well as Defence and Space (DS).

Recommendation: BUY

Price Target FY20: 158.42 €

Price (as of 3-Jan-20) 130.48 €

Reuters: AIR.PA, Bloomberg: AIR.FP

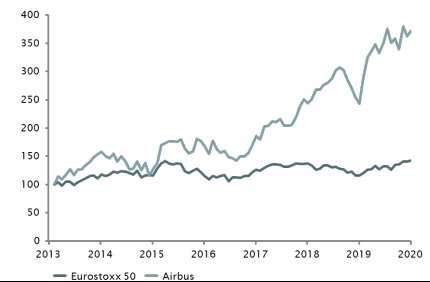
52-week range (€) 78.93-137.20

Market Cap (€mn) 101,916

Outstanding Shares (mn) 781.10

Source: Capital IQ

Airbus vs. Eurostoxx 50



Source: Eikon

(Values in € mn)	2018	2019E	2020F
Revenues	63,707	70,607	77,444
Revenue Growth	11%	12%	12%
Core EBITA	5,395	6,694	8,009
Net Income	3,054	3,901	5,076
EPS	3.94	4.99	6.47
P/E	21.3	21.22	21.45

Source: Analysts Estimations

THIS REPORT WAS PREPARED EXCLUSIVELY FOR ACADEMIC PURPOSES BY [HANNIG J., LINDNER K.], A MASTER IN FINANCE STUDENT OF THE NOVA SCHOOL OF BUSINESS AND ECONOMICS. THE REPORT WAS SUPERVISED BY A NOVA SBE FACULTY MEMBER, ACTING IN A MERE ACADEMIC CAPACITY, WHO REVIEWED THE VALUATION METHODOLOGY AND THE FINANCIAL MODEL. (PLEASE REFER TO THE DISCLOSURES AND DISCLAIMERS AT END OF THE DOCUMENT)

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Company overview

Airbus Commercial Aircraft

Offering customers a full range of passenger aircraft, corporate jets, freighters as well as supportive services the commercial aircraft unit creates around 74% of the group's revenues, which accounted for €47.2bn in 2018.

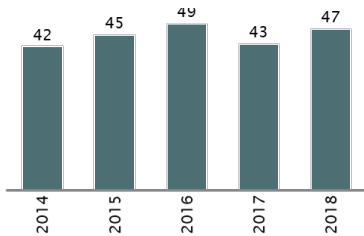
Inside commercial aircraft the main value driver is the production and delivery of the different types of passenger aircraft for more than 100 passengers. Thus, Airbus offers narrowbody jets (single-aisle aircraft for 100-240 passengers) as well as widebody jets (twin-aisle aircraft for more than 200 passengers), for 100 to more than 500 passengers and distances of up to 18,000km.

In addition to the sale of aircraft, the after-sales service at Airbus commercial aircraft plays an increasingly important role. Next to traditional maintenance & engineering, flight trainings and flight operations, Airbus also recently offers the Skywise program. Skywise draws on operational data collected from thousands of Airbus aircraft and other aircraft in subscriber airline fleets. Airlines participating in this program can benefit from vast amounts of operational data and optimize aircraft performance through flight operations data analytics among other things.

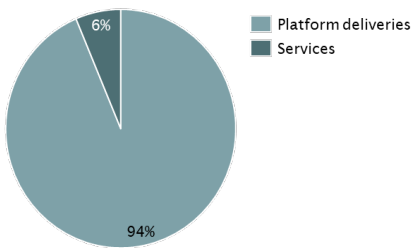
Airbus Defence & Space

Airbus Defence & Space is the second biggest business segment of Airbus representing 17% of the group's total revenue.¹ It originated after the restructuring in 2014 from the former EADS divisions: Cassidian, Airbus Military and Astrium. The segment itself is again separated in three business lines: The Military Aircraft range includes mission, transport, tanker and combat aircraft. Space Systems offers a full range of civil and military services for telecommunications, navigation observation and orbital systems. The space industry can be further divided into three segments: Satellites, Launch Services, and Ground Equipment, all of which are served by Airbus. And the third segment Communication, Intelligence, and Security (CIS) comprises services around their business line: CyberSecurity, data processing from platforms and secure communication. The main revenue driver for Defence & Space are the military aircraft activities with their most prominent product, the combat aircraft "Eurofighter Typhoon".

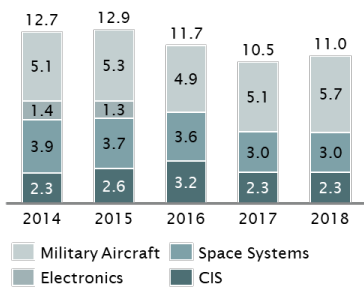
Revenue development Airbus Commercial Aircraft in €bn
Source: Airbus annual report 2014-2018



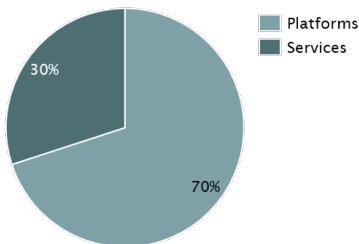
Revenue distribution inside Airbus Commercial Aircraft 2018
Source: Airbus annual report 2018



Revenue development Airbus Defence & Space in €bn
Source: Airbus annual report 2014-2018



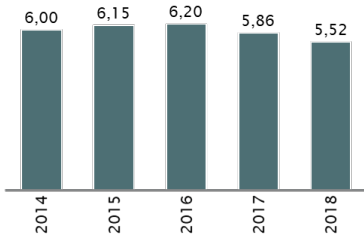
Revenue distribution inside Airbus Defence & Space 2018
Source: Airbus annual report 2018



¹ Airbus Annual Report 2018

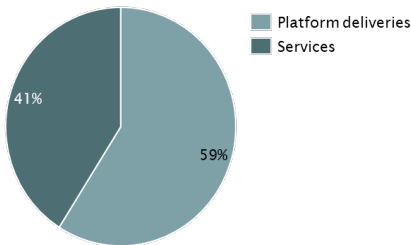
Revenue development Airbus Helicopter in €bn

Source: Airbus annual report 2014-2018



Revenue distribution inside Airbus Helicopter 2018

Source: Airbus annual report 2018



Airbus shareholder structure

Source: Airbus

Shareholders	Share
Government of France	11.03%
German Government	11.02%
Sociedad Estatal de Participaciones Industriales	4.16%
State-owend	26.21%
Free float	71.79%

Airbus Helicopter

Airbus Helicopter is the third and in the same time smallest segment of the Airbus Group. This business segment is the market leader in the civil & parapublic helicopter market grabbing a market share of 54% in 2018. In the same year Airbus Helicopters realized a revenue of €5.934bn which represents 9% of the group’s total revenue.

Airbus Helicopter is split in a civil and military division, whereas the civil sector is with 51% only slightly larger.² The product range consists of a total of 17 helicopters throughout the categories light, medium and heavy. The company also produces two specialised military rotorcraft and another helicopter is currently in the development stage. Its certification is due at the beginning of 2020. Orders for this rotorcraft have already been placed.

Furthermore, Airbus Helicopter also focused on expanding its service and support networks such as HCare. We see this as an important step of diversification in times of declining orders and believe that this in the long run improves the relationship between customers and the company.³

Shareholder structure

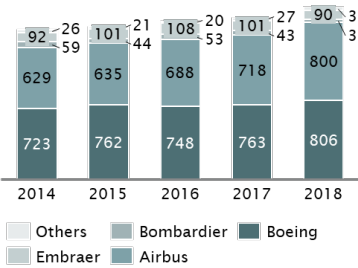
The shareholder structure reflects the reason why Airbus was founded in the first place in May 1969. European industrial leaders as well as politicians initiated this project with the aim to compete with US manufacturers such as Boeing, McDonnell Douglas, and Lockheed Martin. For this reason, the states Germany and France, who founded Airbus, are still shareholders of the company today. Spain joined this European project in 1971. These three countries together have a blocking minority. This means that they can prevent a decision from being taken when a qualified majority is required. As Airbus has these three major shareholders, the company enjoys a certain level of stability and is protected from potential hostile takeovers. These shareholders have also a special way of backing the company financially. By the means of refundable advances called ‘European governments’ refundable advances’ the governments inject further money during the development phases of projects. The peculiarity in this case is that the shareholders do not only give money to Airbus in the form of equity but also loans that only have to be paid back if the projects are successful. We see this as an advantage over other market players as Airbus financial risk of new projects is limited.

² Airbus Helicopters Key Figures 2018

³ Calderwood, D. (2019, November 4). A breath of fresh Airbus in the Middle East. Retrieved December 31, 2019, from <https://www.arabianaerospace.aero/a-breath-of-fresh-Airbus-in-the-middle-east.html>.

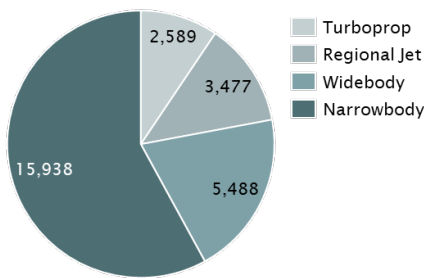
Jet aircraft deliveries

Source: Airbus, Boeing, Embraer, Bombardier, Cirium



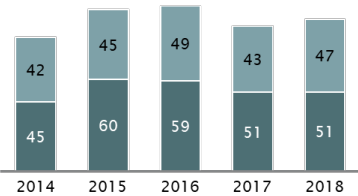
Global fleet 2019

Source: Oliver Wyman



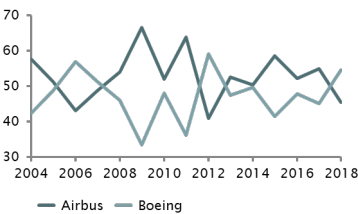
Airbus and Boeing revenues in €bn

Source: Airbus & Boeing annual reports

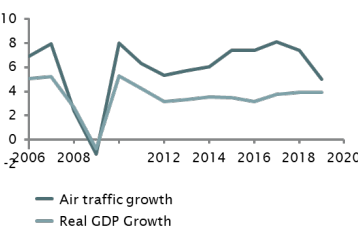


Airbus and Boeing net orders in %

Source: Airbus & Boeing order books



Correlation global air traffic growth and GDP growth (in %)



The Sector

Airbus Commercial Aircraft

Target market

Airbus Commercial Aircraft operates in the global commercial jet airplane market. This market is characterized by a very homogenous competitive environment with only a few competitors. The largest market players 2018 in terms of deliveries are Boeing (806), Airbus (800), Embraer (90) and Bombardier (33). However, the most relevant competitor of these is Boeing, as it competes directly with Airbus in the narrowbody and widebody segment, while Embraer and Bombardier operate primarily in the regional jet segment and therefore compete with Airbus at the lower end of the narrowbody segment at most. At the beginning of 2019 the narrowbody segment was the largest segment in the commercial jet aircraft sector with almost 16,000 active aircraft. The wide body segment comprised about 5,500 active aircraft and the regional jet segment about 3,500 aircraft.⁴

In the narrowbody and widebody segment, which comprise a total of more than 21,000 aircraft, Airbus and Boeing enjoy a quasi-duopoly position, in which Boeing has been ahead in terms of sales in recent years. This was due to both higher overall deliveries and a larger share of more expensive widebody deliveries. While Airbus has already been able to report higher net orders for most of the past few years, these will probably also be reflected in higher revenue figures in 2019, as Airbus was able to deliver significantly more aircraft than Boeing in 2019, particularly as a result of the 737-Max crisis.

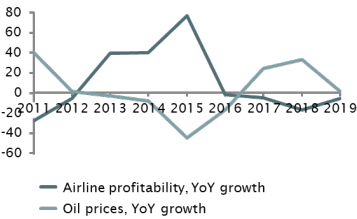
Factors driving demand

In order to be able to provide a valuation of the company it is important to understand which factors are influencing the demand of the offered aircraft and which consequences this will have for the aircraft manufacturers.

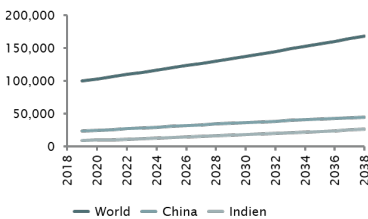
The probably most important factors for global aircraft demand are air traffic demand, freight demand, the global economic development, oil prices, national and international (de-)regulations, the age of the existing fleet and the replacement demand as well as the availability of aircraft financing. Moreover, temporary events such as political crises, pandemics, environmental disasters, wars and terror attacks have negative impacts on demand and lead to fluctuations in the short-term. This effect is even stronger when aircraft financing is limited. But in the long-term aircraft demand is mainly still dependent on air traffic demand, which is

⁴ Oliver Wyman (2019), Global Fleet& MRO Market Forecast Commentary 2019-2029

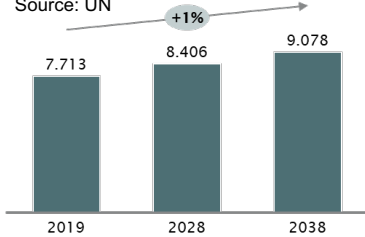
Correlation airline profitability and oil price



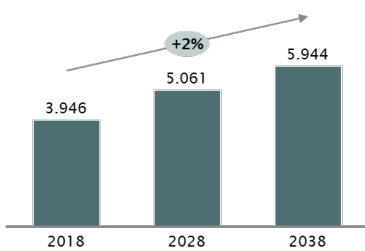
GDP forecast in \$bn
Source: IATA



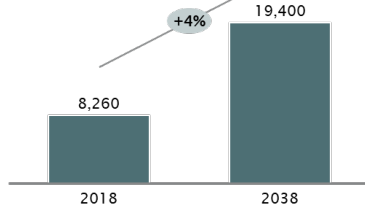
World population forecast in bn
Source: UN



Global middle class forecast in bn
Source: Oxford economics



Global air traffic forecast in RPKbn
Source: IATA



primarily influenced by long-term economic development. In fact, there is an almost perfect correlation between air traffic demand growth and the global GDP growth.⁵

Besides, the global economic development, population growth – particularly of the financially strong middle class – as well as flight fares play a crucial role.

In total, a booming global economy and rising wages would lead to a growing demand for additional aircraft. Contrary, a decrease in important economies would lead to a restructuring of airlines’ fleet planning so that they would match the global demand. Moreover, a significant increase in fuel costs, which are depended on oil prices, would result in airlines replacing old and inefficient aircraft faster than planned with new, more efficient aircraft in order to prevent a decrease in profitability.

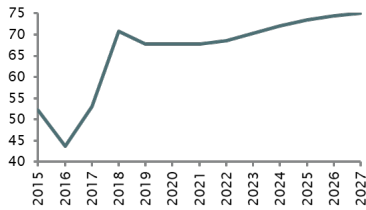
Indeed, there is a direct negative correlation between oil prices and the profitability of airlines.⁶ Airlines also benefit from low interest rates as these reduce financing cost of new aircraft. However, if interest rates rise, Airlines would preserve their existing fleet and delay new orders.

Macroeconomic conditions

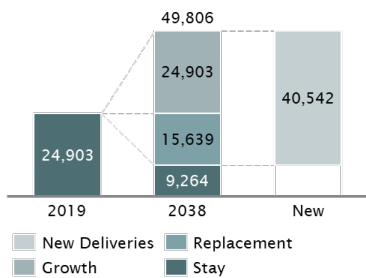
Following the estimations of the OECD, one clearly sees that the global GDP is expected to grow with a CAGR of 2.8% until 2038, which would imply a factor of 1.69. Main growth drivers are mostly Asian countries such as China with a CAGR of 3.4% or India with a CAGR of 5.6%.⁷ Moreover, global population is forecasted to grow with a CAGR of 0.86% reaching a total of 9.1bn people in 2038 according to the UN.⁸ Particularly, the global middle class (income between \$20k and \$150k) is predicted to increase from 3.95bn in 2018 to 5.95bn people in 2038 making up 66% of global population. The main growth here is coming from developing countries as well as Asia.⁹ The strong growth of the solvent and more travel-friendly middle class will result in a strong increase in travel demand. Thus, the International Air Transport Association believes that global air traffic demand measured in RPK is expected to grow with a CAGR of 4.4% from 8.26x10¹² passenger kilometers in 2018 to 19.4x10¹² in 2038, which would imply a factor of 2.3.¹⁰ Besides, Canada's Energy Board for example expects Crude Oil prices to rise steadily in the next years, reaching \$75 per barrel in 2027.¹¹ The American EIA even forecasts oil prices of \$100 per barrel in 2050.¹² In combination with historically low interest rates, which won't rise that much in the nearer future

⁵ IATA (2019), Annual growth in global air traffic passenger demand from 2006 to 2019 & OECD (2019), Real GDP long-term forecast
⁶ IATA (2019), Economic Performance of the Airline Industry - 2019 Mid-year report
⁷ OECD (2019), Real GDP long-term forecast"
⁸ United Nations (2019), World Population Prospects 2019
⁹ Oxford Economics (2018), The geography of the global middle class
¹⁰ IATA (2019), Global Air traffic growth forecast 2019
¹¹ Canada Energy Board (2019), Canadas Energy Future 2019
¹² EIA (2019), International Energy Outlook 2019

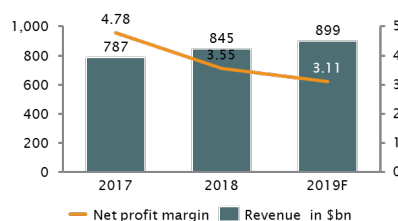
Crude oil spot price forecast in \$/bbl
Source: Canada Energy Board



Aircraft demand forecast
Source: Own calculation



Profitability of airline industry
Source: IATA



according to different economists, this will lead to an ongoing high demand for commercial aircraft during the period under consideration until 2038 in our view. This demand is driven both by a large number of replacements and the need for new aircraft due to increased air traffic demand.

Assessment of market demand

In order to be able to approximate the for Airbus relevant demand we have examined the narrow and widebody segment more closely. Based on the IATA forecast that air traffic demand will increase 2.3-fold by 2038 and the assumption that aircraft utilization can be further optimized in the future, we assume that at least a doubling of the current global fleet is necessary to meet the additional demand for air traffic. The global fleet of commercial jet aircraft would thus increase by 24,900 aircraft to a total of 49,800. In addition to this number, there are also the aircraft required for replacement. Aircraft retirements increased in average by 4% yearly since 1980.¹³ With 505 aircraft retired in 2018 this growth rate would lead to 15,640 retirements until 2038. Considering increasing oil prices as well as the fact that 505 retirements in 2018 are a comparably low basis (between 2008-2013 there were around 700 retirements each year), we consider this number to be a conservative approximation of the replacement need. Thus, we assume that at a rough estimate there is a total demand for at least 40,500¹⁴ new commercial jet aircraft until 2038. All in all, we think this is a pretty good overall market demand for Airbus.

In our view, this demand will be to a large extent driven by narrowbody aircraft. This trend already emerged during the last years and is likely to extend further. Technological progress leads to higher ranges and more efficient narrowbody aircraft. Thus, narrowbody aircraft with its lower capacities can also be used for long-haul flights to secondary airports, which before could have been only supplied unprofitably with widebody aircraft. Hence, narrowbody aircraft are for example a perfect instrument for the further aspiring low cost carriers. The growth of the widebody segment correspondingly will be lower, since many widebody aircraft will be substituted by narrowbody aircraft.

Analysis of market supply

In order to understand how Airbus can benefit from this demand, we have further examined the product offering of Airbus and the other manufacturers as well as compared this by different criteria. These criteria include both range and capacity,

¹³ IATA (2018), Best Industry Practices for Aircraft Decommissioning 2018
¹⁴ Airbus and Boeing forecast a market demand of 39,210 and 44,040 aircraft

Airbus passenger aircraft
Source: Airbus

Aircraft family	Versions
A220	A220-100, A220-300
A320	A318, A319, A320, A321, A319neo, A320neo, A321neo, A321LR, A321XLR
A330	A330-200, A330-300, A330-800neo, A330-900neo
A350	A350-900, A350-900ULR, A350-1000
A380	A380-800

A220-300 vs. its competitors
Source: Airbus, Boeing & Embraer

	E-Jet E2 195	A220-300	737-MAX 7
Capacity (dual class)	120	120-150	153
Max. range (in km)	4,800	6,204	7,130
Max. cruise speed	M0.82	M0.82	M0.82
List price (2018 \$mn)	60.4	91.5	99.7
Fuel efficiency	Comparable		+5.1%

A320neo vs. 737-MAX 8
Source: Airbus & Boeing

	A320neo	737-MAX 8
Capacity (dual class)	180	178
Max. range (in km)	6,300	6,570
Max. cruise speed	M0.82	M0.82
List price (2018 \$mn)	110.6	121.6
Fuel efficiency		+4-6%

A321neo vs. 737-MAX 10
Source: Airbus & Boeing

	A321neo	737-MAX 10
Capacity (dual class)	220	204
Max. range (in km)	6,850	6,110
Max. cruise speed	M0.82	M0.82
List price (2018 \$mn)	129.5	134.9
Fuel efficiency		+7%

A321XLR
Source: Airbus

	A321XLR	No actual comp.
Capacity (dual class)	220	
Max. range (in km)	8,700	
Max. cruise speed	M0.82	
List price (2018 \$mn)	142	
Fuel efficiency	-30% vs. 757	

to understand the more precise scope, as well as price and, in particular, efficiency given that airlines (the end customers) operate at the minimum profitability level.¹⁵ In the narrowbody segment Airbus is producing more than 10 different types of aircraft. Based on the current backlog, in our view the A220-300, A320neo, A321neo and A321 XLR are the most important of these aircraft for the future. Even though Boeing's 737-Max is currently in a crisis, we assume that it will remain the biggest competitor in the long term and therefore continue to include it in the comparison. A full competitive landscape can be seen in *Figure 3* in the Appendix. The A220 which was originally developed by Bombardier and got acquired by Airbus in 2018 mainly competes in terms of capacity with the Embraer E-Jet E2 at the lower bound and the Boeing 737-Max 7 at the upper bound. Due to its lightweight-construction and extreme fuel-efficient engines it can be operated much cheaper than the 737 with almost the same capacity and range. According to list prices which are obviously never paid, since operators give huge discounts, it is also much cheaper.¹⁶ Compared to the Embraer, it is characterized by its greater range and greater capacity with similar efficiency. In our view the A220 makes a perfect fit for underserved regional and transcontinental routes. Thus, we assume that it can achieve further success besides the interest of different US airlines which have already ordered the aircraft.¹⁷ Airbus' workhorse, the A320neo, directly competes with the 737-Max 8 in terms of capacity and range. Besides a lower list price it also has lower operating costs due to its 4-6% higher fuel efficiency.¹⁸ Thus, it is particularly interesting for low cost carriers and can show around 4,000 orders during the last 9 years. Other potential competitors are COMAC's C919 or Irkut's MC-21, which have not been approved yet, hence, there is no available operating data yet. Due to the limited experience of the manufacturers and the more than six-year delay of the programs, we assume that the jets of Airbus and Boeing should be on a technically higher level and therefore more efficient. A comparable picture emerges with the A321neo. It increases also lower purchase costs and consumes up to 7% less fuel than the 737-Max 10, its direct competitor in terms of range and capacity. Furthermore, Airbus announced this year that there will be an additional version with an even higher range entering the market in 2023. The A321XLR covers a market between the normal narrow and widebody ranges and will be used for example by United or American Airlines on transatlantic flights to replace the ageing and less efficient 757. More than 450

¹⁵ IATA (2019), Economic Performance of the Airline Industry - 2019 Mid-year report

¹⁶ Xing, J. (2015, February 24). CS300 first flight Wednesday, direct challenge to 737-7 and A319neo. Retrieved from <https://leehamnews.com/2015/02/25/cs300-first-flight-wednesday-direct-challenge-to-737-7-and-a319neo/>.

¹⁷ Capa. (2019, October 11). Delta Air Lines: A220 delivers on performance and customer experience. Retrieved December 31, 2019, from <https://centreforaviation.com/analysis/reports/delta-air-lines-a220-delivers-on-performance-and-customer-experience-494791>.

¹⁸ Airbus documents

orders from 22 different operators in the last 6 months confirm the existing market demand for this aircraft.¹⁹ Since Boeing currently experiences high financial stress due to the 737-Max crisis, we believe that the launch of its own new midsize airplane will be further delayed or even canceled. Thus, Airbus for the moment will have no competition in this market and even airlines such as Delta Airlines, which have more than 100 Boeing 757 and 767 might be forced to rely on Airbus as its supplier. Hence, based on the actual product offering in the market we see good conditions for Airbus to further increase its market share in the narrowbody segment. This is based in particular on the technical qualities of Airbus aircraft and in our view is not further strengthened by the 737-Max crisis. Boeing has announced a production stop for the time being, but since Airbus itself is producing at the limit and is booked out for years, Airbus will not deliver significantly more aircraft at once per year and won't be able to supply replacement aircraft directly. In the widebody segment, however, the situation is not as definite. Airbus' A330 and A350 versions compete with the different versions of Boeing's 777 and 787.²⁰ Since these aircraft are used differently depending on the airlines, direct comparisons are not always clear. Based on range and capacity, however, it makes sense to compare the A330neo versions with the 787-8 and particularly with the 787-9. In the moment, the 787 is known as the most efficient widebody aircraft in the market and thus has slightly lower operating costs than the also very efficient A330neo. However, due to much lower development costs Airbus is in the position to sell the A330neo comparatively cheaper than Boeing its 787. Thus, the difference in efficiency can be amortized by lower capital costs.²¹ Considering the huge number of old A330 still in-service today as well as increasing fuel prices, we believe there is a lot of replacement need for this aircraft in the next years which might lead to an increasing demand of A330neo.²² In the segment for aircraft with around 350 passengers Airbus' A390-900 is competing with Boeing's 787-10. Again, the 787-10 is the more efficient aircraft but much more expensive regarding the purchase.²³ Taking a closer look at the range, rather the 777-X might be the future competitor of the A350. The 777 has the more efficient engines but is much heavier than the A350. Eventually, fuel consumptions per passenger might be on a comparable level depending on the case.²⁴ Comparing pure list prices Airbus

A330-900neo vs. 787-9
Source: Airbus & Boeing

	A330-900neo	787-9
Capacity (dual class)	300	296
Max. range (in km)	13,400	13,950
Max. cruise speed	M0.86	M0.85
List price (2018 \$mn)	296.4	292.5
Fuel efficiency		Slightly better

A350-900 vs. 787-10
Source: Airbus & Boeing

	A350-900	787-10
Capacity (dual class)	300-350	336
Max. range (in km)	15,000	11,750
Max. cruise speed	M0.89	M0.90
List price (2018 \$mn)	317.4	338.4
Fuel efficiency		Slightly better

A350-1000 vs. its competitors
Source: Airbus & Boeing

	777-8	A350-1000	777-9
Capacity (dual class)	384	350-410	426
Max. range (in km)	16,170	16,100	13,500
Max. cruise speed	M0.89	M0.89	M0.89
List price (2018 \$mn)	410.2	366.5	442.2
Fuel efficiency	Slightly better		Slightly better

¹⁹ Airbus. (2019, December 20). Airbus' A321XLR flies high with 450 customer bookings. Retrieved December 31, 2019, from <https://www.airbus.com/newsroom/stories/a321xlr-programme-update.html>.

²⁰ The A380 and 747 are not included in the analysis as they are expiring products

²¹ Vinay Bhaskara (25 November 2014). "UPDATED ANALYSIS: Delta Order for A350; A330neo Hinged on Pricing, Availability". Airways News.

²² Airbus A330 market update and review. (n.d.). Retrieved December 31, 2019, from <https://www.icf.com/insights/transportation/Airbus-a330-aircraft-analysis>.

²³ Cummins, N. (2019, October 1). The Boeing 787 vs The Airbus A350 - What Plane Is Best? Retrieved December 31, 2019, from <https://simpleflying.com/boeing-787-vs-the-airbus-a350/>.

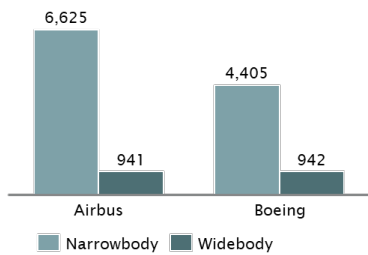
²⁴ Cummins, N. (2019, August 17). Boeing 777x vs Airbus A350 - What Plane Is Best? Retrieved December 31, 2019, from <https://simpleflying.com/777x-vs-a350/>.

versions are again much cheaper which could be the decisive sales argument. Moreover, Airbus just recently was able to win Qantas' sunrise project.²⁵ We see this as a confirmation that Airbus is certainly competitive in the ultra-long-haul segment. However, we also see that especially in the widebody segment airlines are following their own very subjective strategies regarding fleet planning. Thus, the decisive criterion is often not apparent in the end. However, it is also evident that Airbus is very competitive in the widebody segment, so we assume that the future market situation here will be quite balanced.

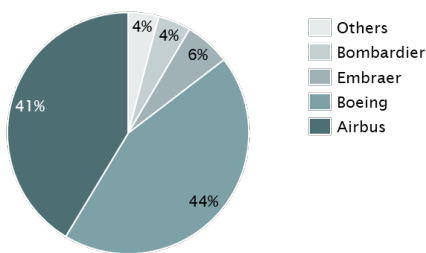
This assumption is also supported by the analysis of the current backlog of both manufacturers. In the narrowbody segment Airbus has a backlog of more than 6,600 aircraft while Boeing "only" has a backlog of 4,400 aircraft. In the widebody segment both manufacturers have an almost equal backlog of around 940 aircraft.²⁶

Besides the product and backlog analysis we have also performed a customer analysis and have examined the top 100 airlines by fleet size more closely (Figure 1.).²⁷ The actual distribution of the current fleet among the different manufacturers is as follows: Boeing 44,1%, Airbus 41,4%, Embraer 6,1% Bombardier 4,4% and others 4,1%. Overall, 20 of the top 100 airlines have a fleet with a Boeing share of at least 85%, while 29 of the top 100 airlines have a fleet with an Airbus share of at least 85%. We see these airlines as a rather unattainable target market for the other manufacturers, since airlines would have considerably high switching costs. Nevertheless, Airbus has secured orders from Norwegian, Japan and All Nippon Airlines among others which otherwise operate almost exclusively Boeing aircraft. Especially the order of 35 A350 by Japan Airlines is noteworthy, since in our view this underlines Airbus competitiveness in the widebody segment once again. Moreover, Norwegian's order of 88 A320 and A321 shows that airlines are willing to change their entire fleet planning because of the quality of Airbus' product offerings. Furthermore, Airbus has achieved a monopoly position with several big players (e.g. Indigo, AirAsia Group or Sichuan) in fast growing Asian markets such as India, China or Malaysia. Moreover, an analysis of the top 30 low cost carriers by fleet size also shows that Airbus aircraft are the preferred aircraft in this sector with market share of 51% while Boeing's market share is just 42%. We see this as an important sign as the narrowbody segment is expected to grow due to a high demand of the LCCs.

Airbus & Boeing Backlog as of 01.12.2019
Source: Airbus & Boeing order books



Top 100 airlines fleet by manufacturer
Source: Planespotters.net



Threat of new competitors

²⁵ Qantas picks Airbus A350-1000 over Boeing 777X for Project Sunrise ultra long-haul flights. (n.d.). Retrieved December 31, 2019, from <https://www.business-traveller.com/business-travel/2019/12/13/qantas-picks-airbus-a350-1000-over-boeing-777x-for-project-sunrise-ultra-long-haul-flights/>.
²⁶ Airbus and Boeing documents
²⁷ Planespotters.net (01. December 2019)

Since demand appears to be secure under current market conditions, we have continued to examine the threat posed by potential new competitors. Particularly noteworthy here are the state-supported COMAC from China and Irkut from Russia. As already mentioned, both are currently developing a narrowbody aircraft which should provide an alternative for Airbus' A320. Initially, the C919 from COMAC should be handed-over to the customers in 2016 but still has no certification of the authorities. The certification by the Chinese aviation authorities is now scheduled for 2021, so that the first delivery can be expected in 2022. The important certifications of European and US authorities are still open.²⁸ A total of 815 orders or expressions of interest have been received so far, but only 34 of these come from abroad. Leading aviation experts to assume that the C919 due to its long delay has outdated technology and is not as efficient as comparable aircraft from Airbus or Boeing.²⁹ Should this be the case, in our view even in the Chinese market success can't be taken for granted, since airlines need to use the most efficient aircraft independent of the manufacturer due to margin pressure. Without doubt the C919 must prove its operational excellence first, before one can judge about its real threat to incumbent manufacturers. Moreover, long-term global success can just be achieved if COMAC is able to build a global support structure from scratch. Additionally, financing arrangements for airlines need to be provided and COMAC needs to resist against the price pressure from two in the past very aggressively acting competitors with enormous economies of scale through production levels of over 600 narrowbody jets per year. Bombardier recently failed because of this and thus Airbus was able to acquire its C-Series. Embraer on the other side has responded to these challenges by directly selling 80% of its commercial aircraft division to Boeing.³⁰ However, at COMAC we see how determined the Chinese government is pushing this project and thus believe that COMAC will be able to pass this hurdle in the long-term. This is also supported by the fact that Airbus and Boeing currently are not able to fully supply the whole demand due to production constraints. Nevertheless, airlines prefer aircraft with a long-lasting track record and proven reliability. Thus, we assume that COMAC will only become a real global competitor in 10-15 years the earliest and reflect this correspondingly in our valuation.

In general, a similar picture emerges in our view with the MC-21 from Irkut which initially was scheduled to enter the market between 2012-2015. Now market entry

²⁸ Zertifizierung erst 2021: Comac C919 droht weitere Verspätung. (2019, August 8). Retrieved December 31, 2019, from <https://www.aerotelegraph.com/comac-c919-droht-weitere-verspaetung>.

²⁹ Harrison, V. (2019, April 28). Can China's plane-maker take on Boeing and Airbus? Retrieved December 31, 2019, from <https://www.bbc.com/news/business-47689386>.

³⁰ EU prüft Boeing-Embraer-Deal auf Wettbewerbsverzerrung. (n.d.). Retrieved December 31, 2019, from <https://www.airliners.de/eu-boeing-embraer-deal-wettbewerbsgruenden/52137>.- the acquisition has not yet been completed, as the EU competition commission is currently investigating it more closely due to possible distortion of competition

cannot be expected before 2021. Currently Irkut has around 175 orders from Russia and other CIS states³¹ and plans to deliver just 1,000 aircraft during the next 20 years. Moreover, geopolitical tensions and sanctions weaken the Russian economy. Thus, the Russian government can just support Irkut in a very limited way and airlines from various countries are not even allowed to buy Russian airplanes due to sanctions. Therefore, we expect Irkut not to be a global threat to Airbus. Also in Russia and the CIS countries Irkut first has to prove its potential. Besides, these state-supported projects we currently see no further threat of new competitors. The development of large passenger airplanes is very capital intensive as well as time and resource consuming, so that there are too high risk for not state-backed companies.

Production capacities

With best market conditions for Airbus and high demand for its product offering, it is also important to consider Airbus' production capacity and possible limitations. Airbus has final assembly lines in Germany, France, USA, China and for the A220 also in Canada and is thus globally represented. Nevertheless, Airbus must undertake enormous ramp-up efforts to meet global demand. In this regard, the A320neo has repeatedly caused problems. This has recently led to the fact that, the target level of 880 deliveries in 2019 could not be reached and only around 860³² aircraft were delivered. Following glitches with engine suppliers in 2018, it is now a new flexible cabin design in the A321 that makes production more complex and slows down the ramp-up.³³ Overall, we therefore expect that Airbus will have to continue to increase its efforts to raise production levels, especially in the next one to two years. In our view, this will also be reflected in a significant increase in net working capital. Resources freed up by the discontinuation of A380 production in 2021 could ease this situation. Further limitations can also result from a fully exhausted supply chain. However, as Boeing has announced a production stop of the 737-Max for the time being, some of the suppliers, such as the engine manufacturer CFM, whose engines are installed in both the Max and the A320neo, are likely to have capacity freed up again. We therefore see fewer risks for Airbus in this area in the near future. With regard to the ramp-up in the widebody segment and in particular for the A350, we do not currently see any problems for the foreseeable future. Airbus seems to be able to make smart use of the experience gained from the production of the A380.

³¹ Irkut MC-21-300 receives 20 order commitments during MAKS 2019. (2019, August 30). Retrieved December 31, 2019, from <https://airlinerwatch.com/irkut-mc-21-300-receives-20-order-commitments-during-maks-2019/>.

³² 725 confirmed deliveries until end of November plus 142 aircraft according to planespotter.net in December. Total year figures are not confirmed by Airbus yet.

³³ Boeing hits pause on Max. Airbus can't build jets fast enough. (2019, December 17). Retrieved December 31, 2019, from <https://www.chicagobusiness.com/manufacturing/boeing-hits-pause-max-Airbus-cant-build-jets-fast-enough>.

Airbus Defence & Space

Current situation

This business line has been reducing its backlog due to the slowdown in demand for the last three years in a row. Moreover, the segment generated losses concerning an outstanding contract with Saudi Arabia due to the German Defence export ban. In order to avoid that these shortcomings have an impact on the long-term prospective of Airbus Defence & Space, the segment's CEO Dirk Hoke announced an efficiency plan with the aim to reach the Cash Flow target for 2019. Nonetheless, the long-term outlook is promising as the growth of military aircraft will be promoted by the recently signed European military project FCAS (discussion follows later) and the beginning replacement cycle of the Tornado-Jets.

The space systems business segment struggled lately with a decreased demand for commercial satellites which as well contributed to imposing the efficiency plan. Launch vehicles, however, were able to gain foothold as Airbus could secure the first orders for Ariane 6 in 2018.

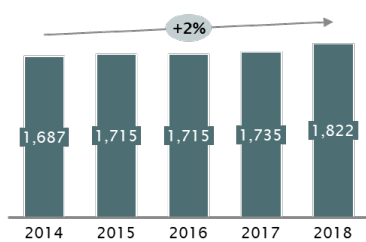
Also, it can be seen that the order situation has improved by 22% in 2019 compared to last year's result.³⁴ These contracts, did not only come from the main revenue source in D&S but was supported by orders in space systems.

Macroeconomic conditions

The development in the defence industry is marked by the rearming of nations which is caused by two main drivers: a rising number of geopolitical tensions (Middle East, Russia and the United States) and the pressure on NATO members to spend 2% of their GDP on the defence budget.

The global military spending has been increasing by 76% since 1998, the year with the least military investments in the post-cold war era and amounted to \$1,822 trillion in 2018. The industry is expected to continuously grow by 3% over the next years, resulting in a market value that exceeds \$2 trillion.³⁵ The nations with the highest defence spending are USA, China, Saudi Arabia, India and France who represent 60% of the total military investments on a global level.³⁶ Furthermore, one must take into account that the Defence industry has changed and has grown by an important sector. Cyber warfare plays an essential role in the 21st century and Airbus introduced their CyberSecurity business line to meet this demand. This market is expected to grow from \$167bn in 2019 to \$248bn in 2023.³⁷

Worldwide military spending in \$bn
 Source: SIPRI



³⁴ Airbus 9m Press Release 2019

³⁵ 2018 Global aerospace and Defence industry outlook (Deloitte)

³⁶ Tian, N., Fleurant, A., & Kuimova, A. (2019, April). Trends in the world military expenditure, 2018. SIPRI Fact Sheet. Retrieved from https://www.sipri.org/sites/default/files/2019-04/fs_1904_milex_2018_0.pdf

³⁷ Statista

Airbus' Defence & Space revenues also benefit from a growing space industry. Since 2005 this market grew by 6.7% on average which represents almost twice the yearly global economic growth. This development can be explained as investors shifted from being governmental institutions to private organizations. Governments are often more reluctant and restrained in increasing their space budgets.³⁸

Regional trends and coverage

Airbus Defence and Space's core market consists of European nations. However, the company also tries to penetrate the Middle Eastern market to win new major clients like Saudi Arabia. Yet, the competition is tough as Donald Trump recently signed military contracts worth more than \$100bn with Middle Eastern states.³⁹ This development makes it more difficult for Airbus to gain foothold in this region. Therefore, the company's focus has been on Europe where Airbus serves its largest customer base. Together with its French competitor Dassault Aviation, Airbus was commissioned a joint military project of Germany, France and Spain. The Future Combat Air System (FCAS) will be the successor of the Eurofighter. It is an integrated system that links drones, combat aircraft, satellites, command & control aircraft, surveillance and ground stations. On June 17th, 2019 the framework conditions for the project were signed by the three defence ministers. To date, it represents Europe's largest defence project that is valued at €50bn.

Competitive environment & strategy

The market leaders and main competitors of Airbus are Boeing, Lockheed Martin, and Raytheon.⁴⁰ In general, there are two ways for defence companies to gain market share. Companies can either grow through being awarded contracts by their national governments or they seek new markets they can penetrate. The market leader Lockheed Martin, for example generated 79% of their revenues through defence contracts from the US government in 2017. Another way of growing chose Dassault, a European competitor of Airbus that won government contracts in developing countries. Airbus itself decided to change its strategy in the past years. In the past, the company focused on the European market to serve its customer base. After being awarded the FACS contract, it seems that Airbus wants to establish a second foothold outside of Europe. Therefore, the company tries to penetrate the Middle Eastern market lately.

Competitive landscape Defence & Space
Source: SIPRI

Company	Rev. in \$bn	Country
Lockheed Martin	44.9	USA
Boeing	26.9	USA
Raytheon	23.9	USA
BAE Systems	22.9	USA
Northrop Grumman	22.4	USA
General Dynamics	19.5	USA
Airbus Group	11.3	Europe
Thales	9	France
Leonardo	8.9	Italy
Almaz-Antey	8.6	Russia

³⁸The future of the European space sector. (2016). doi: 10.1787/9789264262065-18-en

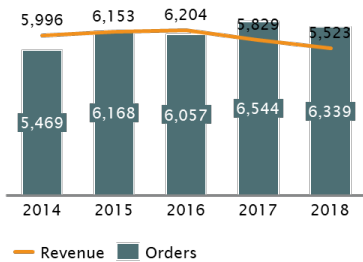
³⁹ Artillerieysteme: USA genehmigen Milliarden-Rüstungsdeal mit Saudi-Arabien - SPIEGEL ONLINE - Politik. (2018, April 6). Retrieved December 31, 2019, from <https://www.spiegel.de/politik/ausland/usa-genehmigen-milliarden-ruestungsdeal-mit-saudi-arabien-a-1201529.html>.

⁴⁰ Commercial Space Activities. (n.d.). Retrieved December 31, 2019, from <https://spacepolicyonline.com/topics/commercial-space-activities/#us-aerospace-companies>.

Airbus Helicopter

Current situation

**Airbus orders and revenue (in €bn)
development**
Source: Airbus annual reports



Airbus Helicopters' revenues declined by 6.3% over the last year. This can be explained by the fact that Airbus Helicopters sold one of their business segments Vector Aerospace in November 2017 and thus is missing its revenue of approximately €500mn. At the moment the main driver for a stable revenue at Airbus Helicopters is the services sector, which made up 41% of the business line's revenue last year. This development correlates with the declining numbers of order intakes in Q3 2019. Also, less helicopters were delivered during the first three quarters in 2019 compared to the previous year. Airbus tries to compensate the weak platform revenues with an increased service offer. For this reason, the business segment realized stable revenues over the last year.

Industry trends

In the aerospace industry the helicopter market only represents a small fraction of the overall market. Over the past decades it gained on volume, but after the financial crisis in 2008 especially the share of civil helicopters decreased substantially. This prompted companies in this industry to introduce a new business line and source of income that helps to stabilize the revenue. Consequently, a services segment should now balance any losses that occur from a weaker demand in platforms. HCare, the services line of Airbus offers amongst others maintenance, flight training and technical support. This offer was well received by the client base as at the end of 2018 2,000 of Airbus' helicopters were covered by this service. This trend is going to expand as clients are satisfied with this offer⁴¹ and the company strengthens a second stream of revenue.

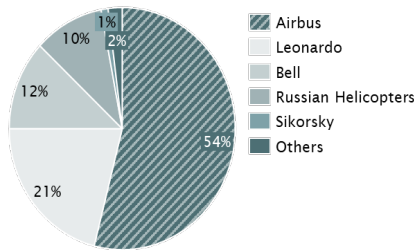
Airbus is also developing other types of helicopters that fall into the category "Urban Air Mobility". City Airbus, as it is called, is an electrically operated vertical take-off and landing (eVTOL) air vehicle which is intended to be used for point-to-point transportation like an "air-taxi". According to original plans, it is supposed to fly fully autonomous, however, legal problems could limit these plans to a large extent. Besides the City Airbus, the company also develops a high-speed helicopter that is expected to reach a velocity of 400 km/h.

These trends are going to support and broaden the traditional industry of helicopter production.

⁴¹ 98% of clients opt to extend their HCare subscription (Airbus HCare)

Regional coverage & competitive environment

Civil helicopter market shares
 Source: Airbus



Airbus Helicopters intends to expand its business in the Middle East. This is to be achieved through its own location in Dubai, but also through cooperation with other local partners. This should increase demand through a recovery of the oil price and the wide product range and thus demonstrate Airbus' market power in this region of the world.

In order to establish itself in the Middle East, Airbus relies on its former partner Saudi Arabia. According to the company's CEO, 80 helicopters will be flying in Saudi Arabia next year. Airbus also sees great potential for further orders from the Saudi oil company ARAMCO, which ordered 5 H145 helicopters last year.

Among the leading Defence contractors, companies from the USA continue to be the undisputed market leader. With sales of \$398bn of the 100 biggest defence companies, they ranked number one ahead of European and Russian companies.⁴²

Although the helicopter industry is very competitive, Airbus manages to sustain its position as market leader in the civil rotorcraft industry which is led by European companies. This industry is marked by big global companies that often acquire smaller or regional competitors as did Lockheed Martin with Sikorsky or Leonardo with AgustaWestland. For this reason, the competition of large companies is drawn through different industries (Helicopter and D&S). However, it has to be noted that manufacturers such as Russian Helicopters, Turkish Aerospace Industries and Korea Aerospace Industries gained on growth and importance in this market.⁴³ It will be difficult for these companies to directly compete with Airbus in the traditional segment of rotorcraft, solely if one considers the cost efficiency. Yet they can be a threat to Airbus' business in the new fields as services and eVOTLs.

Financial Analysis

In order to draw conclusions for Airbus' future development from the aforementioned and the financials of the three segments Airbus Commercial Aircraft, Airbus Defence & Space and Airbus Helicopters have been analysed in further detail and forecasts of the three business segments financials have been developed.

Airbus Commercial Aircraft

⁴² Macias, A. (2019, January 10). American firms rule the \$398 billion global arms industry: Here's a roundup of the world's top 10 Defence contractors, by sales. Retrieved December 31, 2019, from <https://www.cnbc.com/2019/01/10/top-10-Defence-contractors-in-the-world.html>.

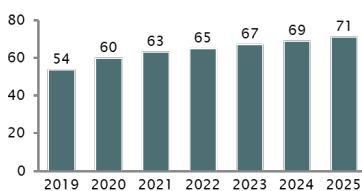
⁴³ Global Rotorcraft Market 2019-2029

Starting with the Commercial Aircraft segment it becomes clear that the business is mainly based on the overall deliveries of commercial aircraft. Deliveries are directly dependent on demand on the one hand side and on the production rate of the different aircraft types on the other side. Thus, next to the already described air traffic demand growth Airbus is directly dependent on their capabilities to ramp-up aircraft production. Here, in our view a main value driver are the better margins of the more efficient neo versions with its new engines and longer ranges. An increasingly important key driver in this business segment are also the revenues generated by services. This driver is mainly influenced by the overall development of operated fleet of commercial aircrafts and the increasing amount of available operating aircraft data. Rising crude oil prices are forcing airlines to become more profitable and to optimize the use of their aircraft. The newly developed Skywise program is designed to profit from these developments. Since this software program is anything but material intensive and has a significantly better margin than aircraft production, every euro of revenue from Skywise will contribute to a future margin improvement.

Forecast

In order to determine how the key value drivers affect the valuation of Airbus, we use a forecast of 17 years until 2035 to achieve stable and unbiased growth rates. As it has already been clarified before that in our view there is an enormous demand for aircraft in the next 20 years, the crucial question for aircraft deliveries is what production capacity and rate Airbus can provide during the next years. Since Airbus is at the end of a long supply chain, it is not only the capabilities of Airbus itself that are relevant, but also the sustainable resilience of its suppliers - especially engine manufacturers. With Boeing being in a crisis and even stopping the production of the 737-Max for an undefined time, we see released capacities for Airbus on the supplier side, which will support Airbus' ramp-up efforts. Here, it can clearly be seen that immediate and future success will be particularly dependent on the A320 family. According to Airbus itself, the transition to the more profitable A320neo will lead to a 15% improvement in Adjusted EBIT in 2019⁴⁴ - the current results from 2019 Q3 support this. While production has already increased to 60 A320s per month, production is expected to rise to 2021 63 aircraft per month and 65 aircraft per month in 2022. From 2025 onwards, more than 70 machines per month should be built.⁴⁵ We expect these rates to be achieved with further investments in manufacturing and capacity freed up by the discontinuation

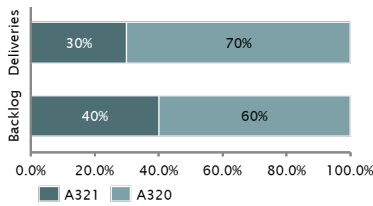
Expected monthly A320 family deliveries
Source: Own forecast



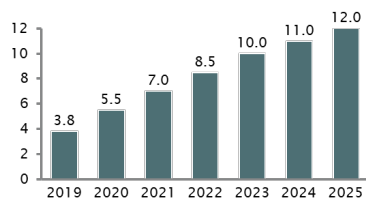
⁴⁴ Reiche, L. (2019, July 31). Airbus: A320 verkauft sich wie geschnittenes Brot. Retrieved December 31, 2019, from <https://www.manager-magazin.de/unternehmen/artikel/Airbus-a320-verkauft-sich-wie-geschnittenes-brot-a-1279775.html>.

⁴⁵ Board, E. (2019, July 3). Airbus to increase its monthly A320 production to 65 aircraft in 2022. Retrieved December 31, 2019, from <https://airlinerwatch.com/Airbus-to-increase-its-monthly-a320-production-to-65-aircraft-in-2022/>.

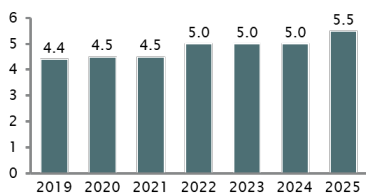
Ratio A320 vs. A321
Source: Airbus



Expected monthly A220 family deliveries
Source: Own forecast



Expected monthly A330 family deliveries
Source: Own forecast



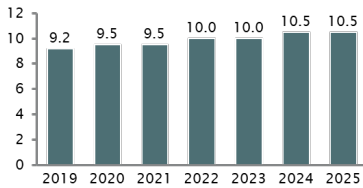
of A380 production. These rates are also covered by a very strong backlog of more than 6,000 aircraft from the A320 family. As the current production here is 70% A320 and 30% A321, but the backlog is 60% A320 to 40% A321, we also see room for margin improvement as the A321 is the higher margin aircraft. Starting with the delivery of the A321XLR in 2023 we assume even higher margins.

Looking at the new A220 series, of which more than 550 aircraft have been ordered to date, we can see a similar picture. Here as well a strong ramp-up is expected in the next years. Following Airbus, the monthly production rate should increase from 4-5 aircraft per month nowadays to 14 aircraft per month – 4 in Alabama and 10 in Mirabel – in 2025.⁴⁶ This increase is particularly important for Airbus, as cost savings of 10% can be expected from a production of 10 aircraft per month.⁴⁷ At this point, however, we are much more conservative and expect a lower production rate of only 12 aircraft per month in 2025, mainly because the current backlog does not yet support such high production rates and we assume that a lot of Airbus capacity will be tied up by the more profitable A320 production - especially in the not too unlikely case that Boeing's 737-Max Grounding will last longer.⁴⁸ Here, we assume that most of the deliveries will be A220-300 and just a small part A220-100 in accordance with the current order book.

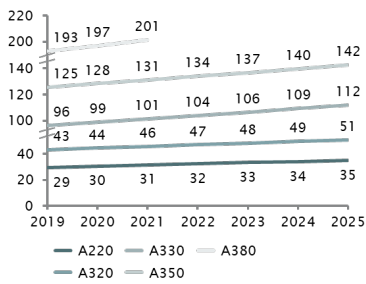
The widebody jets A330 and A350, on the other hand, give a different picture. In this area, at least in the next 1-3 years, a ramp-up is no longer to be expected. The A330 production was just reduced to about 4.5 aircraft per month due to a slight cannibalization by the A350 and is currently being converted from the ceo to the more profitable neo version.⁴⁹ Taking a closer look at the current order book and the order intake, higher production rates are not supported for the next 1-3 years. After a closer analysis of the active A330 fleet, however, it is noticeable that here many active aircraft are slowly reaching an age of 20+ years. In view of high conversion costs to other aircraft type and rising oil prices, we assume that a large proportion of these aircraft will be replaced by the new A330neo model and expect to see corresponding orders within the next few years.⁵⁰ Thus, we expect slightly rising production rates starting in 2022. Here, we assume that most of the deliveries will be A330-900 and just a small part A330-800 in accordance with the current order book.

⁴⁶ Cummins, N. (2019, January 21). Airbus To Ramp Up A220 Production With New Facilities. Retrieved December 31, 2019, from <https://simpleflying.com/Airbus-to-ramp-up-a220-production-with-new-facilities/>.
⁴⁷ Mahendranathan, P. (2019, January 16). Airbus said to accelerate A220 production rate and save US\$3 million per airplane in its assembly plant in Canada... Retrieved December 31, 2019, from <http://newsinflight.com/2019/01/16/Airbus-said-to-accelerate-a220-production-rate-and-save-us3-million-per-airplane-in-its-assembly-plant-in-canada/>.
⁴⁸ Kitroeff, N., & Gelles, D. (2019, December 22). At Boeing, C.E.O.'s Stumbles Deepen a Crisis. Retrieved December 31, 2019, from <https://www.nytimes.com/2019/12/22/business/boeing-dennis-muilenburg-737-max.html>.
⁴⁹ Hephher, T. (2018, April 30). Airbus cuts A330 output, profit capped by engine delays. Retrieved December 31, 2019, from <https://www.reuters.com/article/us-Airbus-results/Airbus-cuts-a330-output-first-quarter-profit-capped-by-engine-delays-idUSKBN1HY0E2>.
⁵⁰ Airbus A330 market update and review. (n.d.). Retrieved December 31, 2019, from <https://www.icf.com/insights/transportation/Airbus-a330-aircraft-analysis>.

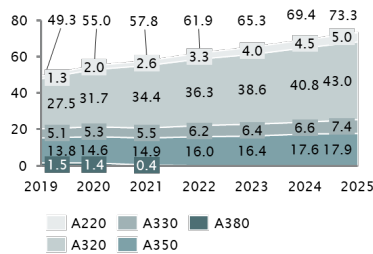
Expected monthly A350 family deliveries
Source: Own forecast



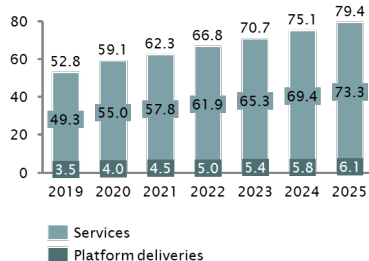
Expected average prices of aircraft families in €mn
Source: Own forecast



Expected aircraft sales volume Commercial Aircraft in €bn
Source: Own forecast



Expected total sales volume Commercial Aircraft in €bn
Source: Own forecast



The A350, launched in 2015, is delivering solid results and is expected to break even this year. However, the ramp-up has been stopped at around 9.5 per month for the time being as demand has slowed somewhat. Overall, however, we expect demand to pick up again in the short to medium term, with many older widebody aircraft retiring from 2022 onwards. Thus, here as well we expect slightly rising production rates starting in 2022. We expect the ratio of A350-900 to A350-1000 to remain about the same at 70% to 30%.

As far as the super jumbo A380 is concerned, there are still 9 outstanding orders of which 7 are expected to be delivered in 2020 and 2 in 2021.⁵¹ Afterwards the production will be completely stopped due to a lack of demand.

In order to move from the expected aircraft deliveries in units to revenue values, we have used Airbus latest list prices of January 2018 as a basis.⁵² As Airbus grants discounts of approx. 40-60% depending on the order size, we calculated the average discounts for the respective aircraft type on basis of the 2018 results.⁵³ In addition, there is a price escalation formula designed to protect Airbus from inflation and other factors so that the price adjusts over time. Thus, the market values for each year are changing with the expected inflation.

All in all, we arrive at a total revenue from aircraft deliveries of € 73.3bn in 2025 compared to € 44.2bn in 2018. After 2025, we expect the growth rate to further decline until 2035, when the expected long-term growth rate of 3.2% will be reached. At that time, sales from aircraft deliveries will have reached approximately € 109.6bn, which equals a CAGR of 5.5%. The long-term growth rate is derived from the global long-term real GDP growth expected by the OECD (2.18%)⁵⁴ and the long-term target euro inflation rate (2%).⁵⁵ We expect this to be a realistic approximation of long-term growth in the commercial aircraft sector, as on average there is a perfect correlation between passenger growth and GDP growth.⁵⁶ Moreover, we have deducted a 1% discount from this nominal growth rate to account for expected losses of market share due to an expected new competitor. An even higher CAGR is forecasted for Services, the other key revenue driver of the commercial aircraft segment. The growth here is mainly influenced by the aforementioned growth in the total operated commercial aircraft fleet as well as the superior service which can be delivered due to the Skywise program. While Boeing

⁵¹ Creedy, S. (2019, April 11). Airbus enters a new era as Faury takes the helm. Retrieved December 31, 2019, from <https://www.airlinerratings.com/news/Airbus-enters-new-era-faury-takes-helm/>.

⁵² Airbus documents

⁵³ Cummins, N. (2019, February 18). Airbus Reveals On Average Airlines Get 50% Off Airline List Prices. Retrieved December 31, 2019, from <https://simpleflying.com/airbus-reveals-on-average-airlines-get-50-off-airline-list-prices/>.

⁵⁴ OECD (2019), Real GDP long-term forecast

⁵⁵ ECB statutes

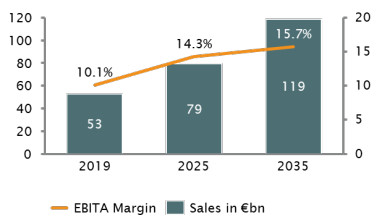
⁵⁶ Retrieved December 31, 2019, from <https://www.kfw-ipex-bank.de/pdf/Analysen-and-views/Market-analysen/2017-01-26-Blitz-Licht-Flughafen-BIP-Faktor.pdf>

forecasts a 3.5%⁵⁷ CAGR of the commercial aircraft services market until 2028, Airbus forecasts an even higher growth of commercial aircraft services from \$76bn in 2018 to \$160bn in 2037⁵⁸, which equals a CAGR of 4%. We predict that Airbus will even grow faster than the rest of the market mainly due to the Skywise program with a CAGR of almost 6% reaching € 6.1bn of revenues in 2025 and € 9.2bn in 2035 compared to € 3bn in 2018. Compared to Airbus ambitions to achieve € 8.7bn of revenues in this area within the next 10 years, our forecast is therefore even conservative.

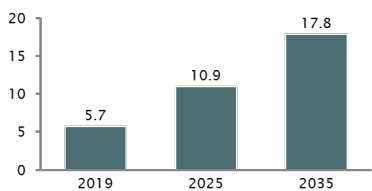
However, most of the growth in revenues is offset by growth in costs. The main cost factor here is the cost of sales. Since aircraft production is highly dependent on the use of materials and working hours, the cost of sales increases almost proportionally to sales and will reach €89.2bn in 2035 compared to €37.1bn in 2018. Nevertheless, this is a gross margin improvement of roughly 2.4% compared to 2018 reached due to more automatization, a higher power over suppliers, a more favourable product mix (shift towards more A321 and neo versions), learning curve effects (especially with A350 and A220) and economies of scale inside the different product lines. SG&A expenses on the other hand have a more fixed cost nature and are assumed to decrease in percentage of revenue with a rate of 0,09%, which is the average decrease of the last 7 years. Thus, SG&A will reach € 2.7bn in 2035 compared to €1.5bn in 2018. An almost comparable approach was used to determine R&D expenses, which also have a more fixed cost nature and will reach €5.7bn in 2035 compared to €2.6bn in 2018. Nevertheless, it is important to note that starting in 2025 R&D won't further decrease in percentage of revenue, since the start of a development of a completely new aircraft type is expected to occur at around that time, which should be on the market 2035 the latest.⁵⁹ Moreover, D&A is expected to remain a roughly constant as percentage of NPPE and thus will increase to €3.8bn compared to €1.8bn in 2018.

Taking a closer look at the balance sheet, the most interesting part is the development of working capital. Here we expect in particular a further increase of the inventory. Until 2025, an inventory holding period of 311 days might be reached compared to 280 days in 2018. This increase is a continuation of the trend of recent years and reflects the strong ramp up efforts of the A320 family and A220. The collection and payables periods are estimated to rather stay constant, as compared to other manufacturers in the aerospace industry a relatively good level has already been achieved through high efforts in recent years. The last integral

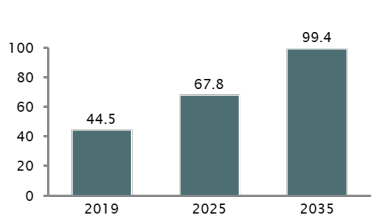
Expected margin development Commercial Aircraft
Source: Own forecast



Expected operational cash flow Commercial Aircraft in €bn
Source: Own forecast



Expected operating current assets Commercial Aircraft in €bn
Source: Own forecast

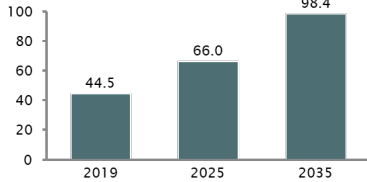


⁵⁷ Boeing Service Market Outlook 2019

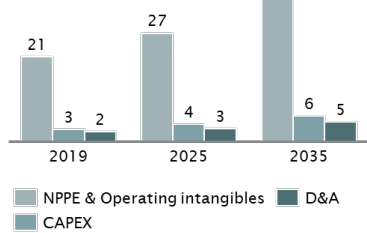
⁵⁸ Airbus. (2018, August 20). Airbus forecasts \$4.6 trillion worldwide market for commercial aircraft services over the next 20 years. Retrieved December 31, 2019, from <https://www.Airbus.com/newsroom/press-releases/en/2018/07/Airbus-forecasts--4-6-trillion-worldwide-market-for-commercial-a.html>.

⁵⁹ Reuters. (2019, November 29). Airbus considering production of hybrid airplane by 2035. Retrieved December 31, 2019, from <https://www.euronews.com/2019/11/29/Airbus-considering-production-of-hybrid-airplane-by-2035>.

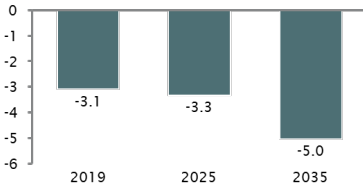
Expected operating current liabilities Commercial Aircraft in €bn
Source: Own forecast



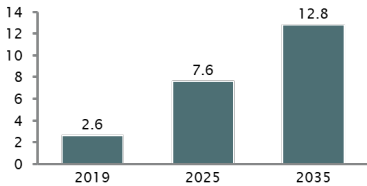
Expected NPPE Commercial Aircraft in €bn
Source: Own forecast



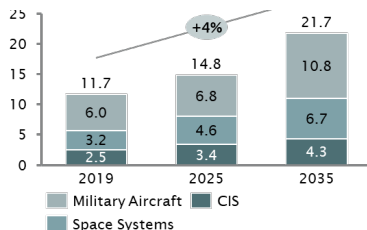
Expected investment cash flow Commercial Aircraft in €bn
Source: Own forecast



Expected free cash flow Commercial Aircraft in €bn
Source: Own forecast



Expected revenue development Airbus Defence and Space in €bn
Source: Own forecast



part of working capital are customer prepayments. The customer pre-delivery payments have a very important function for Airbus, as they cover the industrial risk of aircraft manufacturers and usually ensure that the NWC of aircraft manufacturers such as Airbus is very low and are therefore cash flow driver number 1. For the future we assume that the current part of pre-delivery payments remains rather constant as a percentage of sales. If we look at the entire NWC, we see that it might increase slightly until 2025 due to increased ramp-up efforts and will decrease after 2025.

After we have already mentioned the current part of customer prepayments, it is also important to consider the noncurrent part, which has been handled somewhat differently for the forecast. The difference between the two parts is that the current part is based on the volume of deliveries due within one year, while the non-current part is based more on the total volume of the backlog. Since we assume that the backlog in units will no longer grow much stronger, but only the total value will increase due to the escalation formula – in particular to compensate for inflation – the non-current part of pre-delivery payments will also grow only in line with the expected inflation rate.

Other balance sheet items relevant for estimating investment cash flows like CAPEX and NPPE were assumed to remain constant relative to comprehensive revenues given the high capital requirements of operating in the aircraft manufacturing industry.

All in all, we expect a growing ROIC and a decreasing investment rate mainly due to more service revenues and a shift towards higher margin products. In total, we expect the FCF of the Commercial Aircraft segment to increase from € 2.6bn in 2019 to € 12.8bn in 2035 as we believe that Airbus will be successful delivering more aircraft at better margins.

Airbus Defence and Space

The revenue of Airbus Defence and Space segment is forecasted to increase over the next years, a development which is based on three main pillars. Firstly, EU member states increase their investments in combined European military projects such as FCAS (Airbus was awarded the contract). Secondly, governments worldwide increase their space funding from which Airbus can also benefit. The industry has grown by 5.75% annually since 2013.⁶⁰ Lastly, the threat of cyber warfare rises as countries increase their focus on digitalisation and interconnectedness. It is forecasted that this particular warfare will increase at a

⁶⁰ Seminari, S., & Seminari, S. (2019, November 20). Op-ed: Global government space budgets continues multiyear rebound. Retrieved December 31, 2019, from <https://spacenews.com/op-ed-global-government-space-budgets-continues-multiyear-rebound/>.

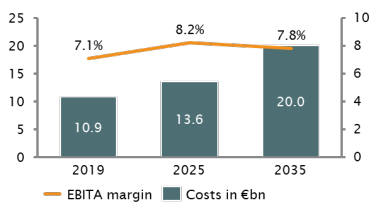
CAGR of 18% until 2024.⁶¹ For this reason, a growing need for Airbus' Cyber Security products is expected.

In the long-term prospects of Airbus Defence & Space the most part of the growth is expected to result from the FCAS project in the Defence sector. Furthermore, Space Systems' positive development will depend on investments by mostly European investors in nano-satellites, launch vehicles such as Ariane 6, and the restart of the replacement cycle. Lastly, the sector CIS is set to benefit from the increased number in cyber-attacks, as cyber security is expected to remain one of the business line's growth drivers besides their navigation programs.

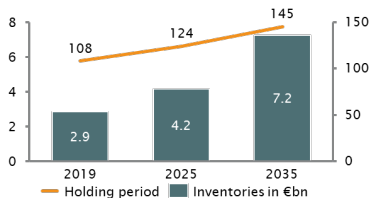
In the short-term the business segment needs to rely on their backlog as they experience a lack of new military contracts at the moment. The growth driver in the near future will predominantly stem from the CIS sector and from cost optimizations.

Forecast

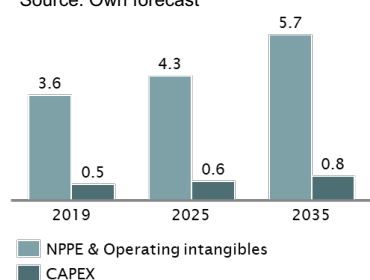
Expected cost and margin development Airbus Defence and Space in €bn
Source: Own forecast



Expected inventory development Airbus Defence and Space in €bn
Source: Own forecast



Expected NPPE and CAPEX development Airbus Defence and Space in €bn
Source: Own forecast



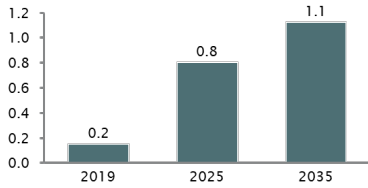
Airbus Defence & Space is expected to grow at a CAGR of 3.46% until 2035. A substantial amount of growth is forecasted to come from the European military project FCAS that will mainly be realized in the second half of the forecasting period. From 2019 to 2021 the prototypes will be built, which are expected to be operational from 2026 onwards. Therefore, a CAGR of 3.49% in the military aircraft sector can be expected. The space segment is forecasted to show the largest growth rate of 4.44% until 2035 attributable to new investments and replacements of older platforms. Lastly, the CIS sector is expected to show the slowest growth at a CAGR of 3.26% as strong growth is expected over the next two to three years due to the increased cyber warfare. However, from there the segment's growth is forecasted to be stable once the high demand for Cyber Security is satisfied.

Production costs are expected to decrease until 2026, which is attributable to more cost-effective production in the Space segment. From then on, these costs will rise again due to the FCAS project. The project will not only increase the production costs but also the R&D spending. It can be assumed that the most intensive phase will take place before production. For this reason, R&D expenditure is assumed to increase until 2026, after which it is forecasted to remain constant depending on the segment's revenue.

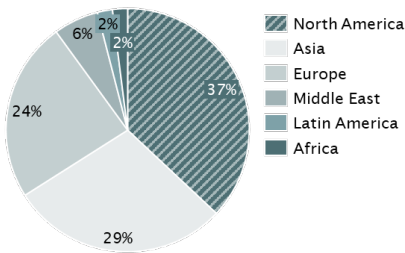
Inventories will increase in the near future as a conservative approach has been adopted due to sanctions against Saudi Arabia that are expected to remain in place and prohibit Airbus to sell their manufactured goods. As a result, the inventory of Airbus D&S will increase until 2023. After that, it will further increase at a slower rate caused by the FCAS project as certain delays in delivery at the beginning must

⁶¹ Cyber Warfare Market Size, Share, Trends, Forecast (2019-2024). (n.d.). Retrieved December 31, 2019, from <https://www.mordorintelligence.com/industry-reports/cyber-warfare-market>.

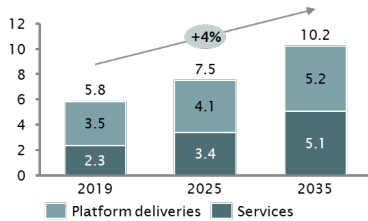
Expected FCF development Airbus Defence and Space in €bn
Source: Own forecast



Global helicopter market by region
Source: Airbus



Expected revenue development Airbus Helicopter in €bn
Source: Own forecast



be assumed. This project is expected to require higher CAPEX investments, for this reason PPE is forecasted to increase gradually until 2026 when the production is expected to start. In total, we expect the Free Cash Flow from Airbus Defence & Space to increase to €1.125bn in 2035.

Airbus Helicopter

The revenue growth of the helicopter market is dependent on socioeconomic reasons, the replacement cycle, innovations, and more recently, on increasingly important service offers. The compounded annual growth rate in this market is estimated to be 1.61% until 2020 and 2.08% in the following years.⁶² These developments are only sustained by strong social drivers and a robust economic environment. The civil and parapublic rotorcraft market is expected to increase by 18,000 rotorcraft to a global helicopter fleet that is valued at \$220bn. First of all, the increasing prosperity in the Asian-Pacific region will be the main growth driver in demand. Over the last years, Airbus has already benefited from a higher demand from China (its fleet grew by 2.7 times during the last five years).⁶³ Secondly, the replacement cycle will lead to new orders especially from North America and Europe. Together these two markets represent more than 50% of the world's helicopter fleet. This means that 57% of the newly produced helicopters will increase the already existing global rotorcraft fleet and 43% will serve as replacements especially in Europe and North America. Thirdly, the military helicopter market benefits from increased defence budgets and higher demands again from the Asian market. 40% of the total military rotorcraft orders in 2018 originated from this region.

Lastly, the services segment in the helicopter division makes up 41% and is forecasted to grow further in order to build a reliable and stable income pillar as the revenues of the sold platforms turned out to be very volatile over the last years. It must be mentioned we follow a conservative approach and doubt that the development of the air taxis and unmanned rotorcraft will have a significant impact on Airbus' revenue over the next years and therefore did not account this innovation in our growth rate.

Forecast

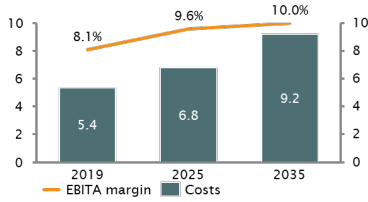
The global demand for civil and military helicopters is expected to amount to 18,000 units which represents a market value of \$220.7bn until 2028.⁶⁴ Of the newly produced rotorcraft, 43% will serve as replacements and 57% of the units

⁶² Global Helicopter Forecast 2017 Airbus)

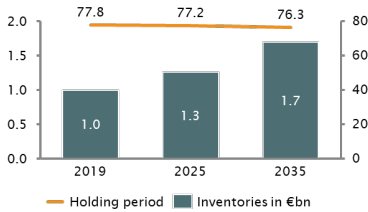
⁶³ Global Helicopter Forecast 2017 (Airbus)

⁶⁴ Huber, M. (2019, August 14). Ten-year Global Rotorcraft Market Pegged at \$220B. Retrieved December 31, 2019, from <https://www.ainonline.com/aviation-news/general-aviation/2019-08-14/ten-year-global-rotorcraft-market-pegged-220b>.

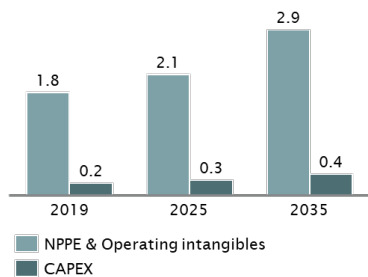
Expected cost and margin development Airbus Helicopter in €bn
Source: Own forecast



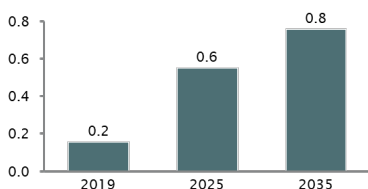
Expected inventory development Airbus Helicopter in €bn
Source: Own forecast



Expected NPPE and CAPEX development Airbus Helicopter in €bn
Source: Own forecast



Expected FCF development Airbus Helicopter in €bn
Source: Own forecast



will represent the actual market growth, indicating a considerable increase in the worldwide fleet of rotorcraft. We expect Airbus Helicopters to benefit from approximately 20% of the demand of 18,000 units which would represent combined revenues of roughly \$40bn in the platform segment over the next ten years. For Airbus civil and parapublic platform this results in a CAGR of 3.08% until 2028. However, it is assumed that the military platforms will not fully benefit from this demand as the competition is tougher, resulting in an annual growth rate of 1.61%.

Besides the global demand increase Airbus will introduce a new helicopter in the market which is expected to also drive growth. The first delivery is estimated to be in 2020. This helicopter with military equipment will be launched in 2026. This will push the revenues of the military platforms to a CAGR of 1.96% until 2035.

In addition, Airbus is increasingly focusing on the services sector and its HCare programme. In 2035, it is forecasted to account for approximately 50% of the segment's revenues. This development is intended to compensate for lower demand, especially in the military helicopter sector, in order to ensure steady growth in the business segment. In our view, it will be the main revenue growth driver until 2035 reaching a CAGR of 5.26% which leads to a total CAGR of Airbus Helicopters of 3.35%.

Helicopter production costs are expected to fall by 0.15% until 2025 annually and then remain at a constant level. The lower costs can be explained by the perfected production of the Puma helicopters. The reason that costs will remain constant from 2025 is the introduction of the H160 military helicopter which will initially lead to higher production costs. Because of this rotorcraft it is expected that R&D costs will rise until the first expected delivery of the H160 military machine. Thereafter, these costs will then be assumed constant from 2026 onwards.

The inventory holding period of this business segment is predicted to decrease steadily, as the services sector accounts for a larger part of the business and is less inventory intensive. Nevertheless, with the launch of a new helicopter we expect more production facilities to be needed. Thus, we see small CAPEX demand and a slightly increasing NPPE. In total, the free cash flow of this business segment is expected to grow to €758mn in 2035.

Valuation

Discounted Cash Flows

In order to receive a valuation from our financial forecast, we performed a DCF valuation for each of the three parts and used its cost of capital as discount rate.

Cost of Capital

The weighted average cost of capital (WACC) is calculated to assess the company's cost of capital according to its financial structure and risk profile. In order to do so, comparable companies were chosen for each of Airbus' business segments (Commercial Aircraft, Defence & Space, Helicopters). Their weekly historic data⁶⁵ were regressed against the MSCI World Index in EUR which resulted in the levered betas for each company. This index was chosen as the majority of the governmental and institutional shareholders come from Europe. Thereafter, these figures were unlevered with their respective and company specific debt-to-equity ratios. In a next step, the average unlevered beta of Airbus and its competitors was calculated. This figure was then re-levered with Airbus' financial structure to reach its business segment beta. This was computed without taking into account the peers' financial structure. In course of the recent years, Airbus issued several bonds with a still long-lasting maturity, which led us to the assumption that the current D/E ratio⁶⁶ is going to remain on a constant level. The calculation resulted in a beta of 1.25 for Commercial Aircraft, 0.97 for Defence & Space, and 1.16 for Helicopters (95% Confidence Interval [1.3686;1.0553]).

With the different re-levered betas, we computed the levered cost of equity for each business segment, using the CAPM.⁶⁷ To determine the market risk premium, the 10Y German Government Bond was chosen as risk free rate which was consequently adjusted⁶⁸ in line with the EU inflation⁶⁹ as we decided to consider the market return of the MSCI World Index in EUR that we also used for the beta regression. Deducting the risk-free rate from the market return, a market risk premium of 9.3% was reached. In order to calculate the cost of debt (2.29%) the yield of the ten-year bonds of Airbus (2.44%) was used. This was subtracted by the product of the 10Y cumulative probability of default for A2 rated companies (annual probability of default: 0.32%)⁷⁰ and the loss given default (recovery rate for senior unsecured notes: 53.85%)⁷¹.

Consequently, we reached following WACC for three business units: Commercial Aircraft 10.35%, Defence & Space 8.19%, and Helicopters 9.65%.

Valuation assumptions

Source: Own calculation

	Airbus CA	Airbus Helicopter	Airbus DS
Beta	1.25	0.97	1.16
WACC	10.35%	9.65%	8.19%
Terminal growth	3.18%	2.50%	1.60%
Oper. value	€101.3bn	€7.2bn	€12.8bn

Results

⁶⁵ Observation Period: 08.02.2013 – 30.08.2019

⁶⁶ D/E ratio: 0.2078

⁶⁷ Re; 12.15% (Commercial Aircraft), 9.54% (Defence & Space), 11.30% (Helicopter)

⁶⁸ $10Y\ German\ Bond\ in\ EU = ((1 + 10Y\ GER\ Yield)^{10} * \frac{(1 + Inflation\ EU)^{10}}{(1 + Inflation\ GER)^{10}})^{\frac{1}{10}} - 1$

⁶⁹ Statista: EU Inflation 2019: 1.9%

⁷⁰ Moody's Average Cumulative Issuer-Weighted Global Default Rates By Letter Rating (2018)

⁷¹ Moody's Annual Defaulted Corporate Bond and Loan Recoveries (2018)

DCF Valuation results
 Source: Own calculation

Share price as result of DCF	
Core enterprise value	€121.244bn
Nonoperating assets	€7.177bn
Nonoperating provisions	€-3.837bn
Noncontrolling interest	€-0.012bn
Retirement related liabilities	€-12.032bn
Net deferred tax assets	€3.903bn
Investments	€5.423bn
Enterprise value	€122.303bn
Debt	€12.399bn
Excess cash	€5.431bn
Common equity value	€115.336bn
Shares outstanding	784.3mn
Share price	€147.01

Using these as discount rates for the respective free cash flows of the different business segments, we receive operating values of €101.3bn for Airbus Commercial Aircraft, €7.2bn for Airbus Helicopter and €12.8bn for Airbus Defence and Space. Adding nonoperating assets as well as net debt, this yields a common equity value of €115.336bn and with expected 784.3mn outstanding shares in 2020 a share price of €147.01.

Risks and scenario analysis

As there are many different unpredictable factors, these valuation results are subject to much risk. For example, Airbus sells most of its products abroad, a large part of its turnover is generated in US dollars. Costs, on the other hand, are mainly incurred in Euros, as Airbus produces most of its aircraft in Europe. Airbus is therefore directly affected by exchange rate fluctuations. In order to minimize the resulting risks, Airbus hedged over 60% of its dollar revenues by securing fixed exchange rates for the next 2 years. For the time after that, the risk is again significantly higher.⁷² On the operational side, the main risk is that Airbus could very easily lose public trust in the event of a scandal or accident. How serious this could be can be seen very clearly from the current 737-Max crisis.

Moreover, Airbus is very dependent on a few, very large and important suppliers such as engine manufacturers. If these are not able to deliver the required quantities or get into financial difficulties, this could lead to enormous production constraints at Airbus. The extent of this was evident in 2018 when Pratt & Whitney failed to keep up with the production of its turbines.⁷³

Additionally, there is also a dependency on individual large customers. If they lose faith in a product, order cancellations can lead to such large production gaps at Airbus that individual series can no longer be produced profitably and must be discontinued accordingly. This was recently the case with the A380.⁷⁴

Finally, Airbus is susceptible to sanctions that serve as political tools. A current example are the sanctions that European countries imposed against Turkey and Saudi Arabia banning military exports. These political decisions have an impact on Airbus' revenues when it is not allowed to sell their goods to their clients.⁷⁵

In order to be able to quantify such effects on the share price, we have carried out a scenario analysis. This is focused exclusively on the commercial aircraft unit, as it represents over 80% of the value of Airbus. We have chosen the long-term growth rate and the WACC as modified parameters, as we consider these to be

⁷² Airbus documents

⁷³ Retrieved December 31, 2019, from <https://www.bloomberg.com/news/articles/2018-06-19/pratt-whitney-close-to-fix-for-part-that-delayed-Airbus-jets>.

⁷⁴ Maceda, C. (2019, February 14). UAE's Emirates cuts A380 order, signs deal with Airbus to buy 70 other aircraft. Retrieved December 31, 2019, from <https://gulfnews.com/business/aviation/uaes-emirates-cuts-a380-order-signs-deal-with-Airbus-to-buy-70-other-aircraft-1.1550121548306>.

⁷⁵ Al Jazeera. (2019, October 17). Turkey, Saudi Arabia and Europe's 'double standard' in arms sales. Retrieved December 31, 2019, from <https://www.aljazeera.com/news/2019/10/turkey-saudi-arabia-europe-double-standard-arms-sales-191016231548811.html>.

indicators that can be used to reflect various risk assumptions. As it can be seen below, deviations of the terminal growth rate only lead to small jumps in the share price, while only small deviations of the WACC lead to very large jumps of the share price.

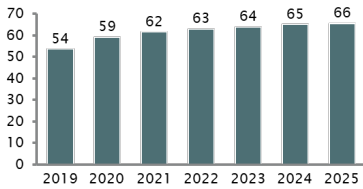
Scenario analysis Airbus Commercial Aircraft
Source: Own assumptions and calculation

Terminal growth rate Airbus Commercial Aircraft

	2.68%	2.78%	2.88%	2.98%	3.08%	3.18%	3.28%	3.38%	3.48%	3.58%	3.68%
7.85%	212.48	214.63	216.88	219.21	221.64	224.18	226.83	229.59	232.49	235.52	238.69
8.35%	193.66	195.34	197.08	198.89	200.76	202.70	204.72	206.83	209.01	211.29	213.67
8.85%	177.95	179.28	180.65	182.07	183.53	185.05	186.62	188.25	189.95	191.70	193.52
9.35%	164.63	165.70	166.79	167.92	169.09	170.30	171.54	172.83	174.16	175.53	176.95
9.85%	153.21	154.08	154.96	155.88	156.82	157.79	158.78	159.81	160.87	161.97	163.10
10.35%	143.32	144.02	144.75	145.50	146.26	147.05	147.86	148.69	149.55	150.43	151.34
10.85%	134.66	135.25	135.85	136.46	137.09	137.74	138.40	139.08	139.78	140.50	141.24
11.35%	127.04	127.52	128.02	128.53	129.05	129.59	130.14	130.70	131.28	131.87	132.47
11.85%	120.27	120.67	121.09	121.52	121.95	122.40	122.86	123.33	123.81	124.30	124.80
12.35%	114.22	114.56	114.92	115.28	115.64	116.02	116.40	116.79	117.19	117.61	118.02
12.85%	108.79	109.08	109.38	109.68	109.99	110.31	110.64	110.97	111.30	111.65	112.00

WACC Airbus Commercial Aircraft

A320 monthly deliveries bottom scenario
Source: Own assumptions



Further, as deliveries of the A320 family are the main value driver within commercial aircraft and its ramp-up has shown some severe issues in the past, we have also examined the impact of ramping-up only half as fast as expected. This would lead to a DCF valuation of €139 per share and thus would have a strong impact.

Peer group and multiple valuation
Source: Own assumptions and calculation

Peer Company	EV/ EBITDA	EV/ EBIT	P/S	P/E
Boeing	30.3x	45.8x	2.1x	49.0x
United Technologies	11.9x	15.7x	1.7x	25.3x
Airbus	15.7x	25.0x	1.5x	26.9x
Lockheed Martin	13.2x	14.9x	1.9x	18.5x
Raytheon	14.3x	16.2x	2.1x	18.8x
Safran	13.1x	19.1x	2.3x	27.4x
NorthropGrumman	14.5x	18.1x	1.7x	19.7x
General Dynamics	12.0x	14.2x	1.3x	15.3x
BAE Systems	10.7x	13.4x	1.0x	13.6x
Thales	13.1x	18.7x	1.2x	18.2x
Median	13.2x	17.1x	1.7x	19.2x

Multiples

In order to analyse the Airbus group from a different angle, a multiple valuation of the company was carried out. The peers used for comparison consist of the main companies in the aerospace & defence industry, each with a market capitalization of at least €20bn. These companies compete directly with Airbus in various areas and have comparable characteristics.

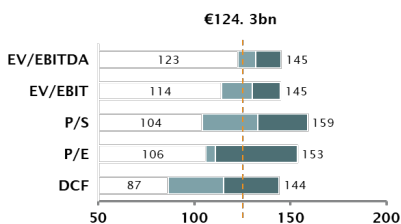
On the football field one can see the equity value of €124.3bn, which is composed of the average result of the different multiples and the DCF valuation. Consequently, with 784.34mn shares in circulation, a target share price of €158.42 for December 2020 can be calculated on the basis of the various valuations. Compared to a stock price of €130.48 as of Dec 31st, 2019, this is a gain of €30.63 per share.

Considering expected dividends of €1.776bn during the year 2020, additional €2.27 per share are expected to be directly paid out to the shareholders. Thus, buying an Airbus stock today we see an expected return on investment of 23.2% in December 2020 and thus recommend buying the stock.

Multiple valuation results
Source: Own calculation

	EBITDA	EBIT	Sales	Earnings
Exp. 2020	€10.5bn	€8.0bn	€77.4bn	€5.8bn
	EV/ EBITDA	EV/ EBIT	P/S	P/E
Enterprise Value	€139bn	€137bn	-	-
Net Debt	€-7bn	€-7bn	-	-
Equity Value	€132bn	€130bn	€133bn	€111bn
Exp. share price	€168.01	€166.04	€169.56	€141.46

Football field and valuation ranges
Source: Own calculation



Final valuation results and expected ROI
Source: Own calculation

Exp. shares outstanding (Dec 2020)	784.34mn
Exp. share price (Dec 2020)	€158.42
Share price (Dec 2019)	€130.48
Exp. dividend per share (2020)	€2.27
Exp. capital gain	€30.21
Exp. return on investment	23.2%

Appendix

Figure 1: Forecast of financial statements. Source: Own assumptions and calculation

Airbus Income Statement Core Business										
	2018	2019F	2020E	2021E	2022E	2023E	2024E	2025E	2030E	2035E
Sales	63,707	70,312	77,444	81,485	86,821	91,454	96,708	101,719	127,503	150,753
Cost of Sales	-50,644	-55,544	-60,855	-63,751	-67,650	-71,010	-74,857	-78,532	-97,835	-115,508
Gross Profit	13,063	14,768	16,589	17,734	19,171	20,444	21,851	23,187	29,667	35,246
SG&A expenses	-2,007	-2,254	-2,410	-2,460	-2,539	-2,589	-2,647	-2,689	-2,893	-3,420
D&A expenses	-2,444	-2,469	-2,536	-2,631	-2,734	-2,852	-2,979	-3,116	-3,919	-4,813
R&D expenses	-3,217	-3,391	-3,632	-3,714	-3,842	-3,923	-4,016	-4,083	-4,808	-5,679
EBITA	5,395	6,654	8,011	8,930	10,056	11,080	12,209	13,298	18,047	21,333
Amortization and impairment of goodwill	0	0	0	0	0	0	0	0	0	0
EBT (Core operating income from sales before taxes)	5,395	6,654	8,011	8,930	10,056	11,080	12,209	13,298	18,047	21,333
Income tax payable	-1,552	-1,878	-2,218	-2,424	-2,676	-2,889	-3,118	-3,324	-4,512	-5,333
Core operating income from sales after taxes	3,844	4,776	5,793	6,506	7,380	8,191	9,091	9,973	13,535	15,999
<i>Airbus Commercial Aircraft</i>	<i>3,034</i>	<i>3,836</i>	<i>4,762</i>	<i>5,395</i>	<i>6,183</i>	<i>6,909</i>	<i>7,721</i>	<i>8,517</i>	<i>11,695</i>	<i>13,950</i>
<i>Airbus Helicopter</i>	<i>271</i>	<i>341</i>	<i>379</i>	<i>409</i>	<i>441</i>	<i>473</i>	<i>505</i>	<i>539</i>	<i>675</i>	<i>770</i>
<i>Airbus Defence and Space</i>	<i>539</i>	<i>599</i>	<i>652</i>	<i>701</i>	<i>757</i>	<i>809</i>	<i>864</i>	<i>918</i>	<i>1,166</i>	<i>1,279</i>
Operating tax rate	28.8%	28.2%	27.7%	27.1%	26.6%	26.1%	25.5%	25.0%	25.0%	25.0%

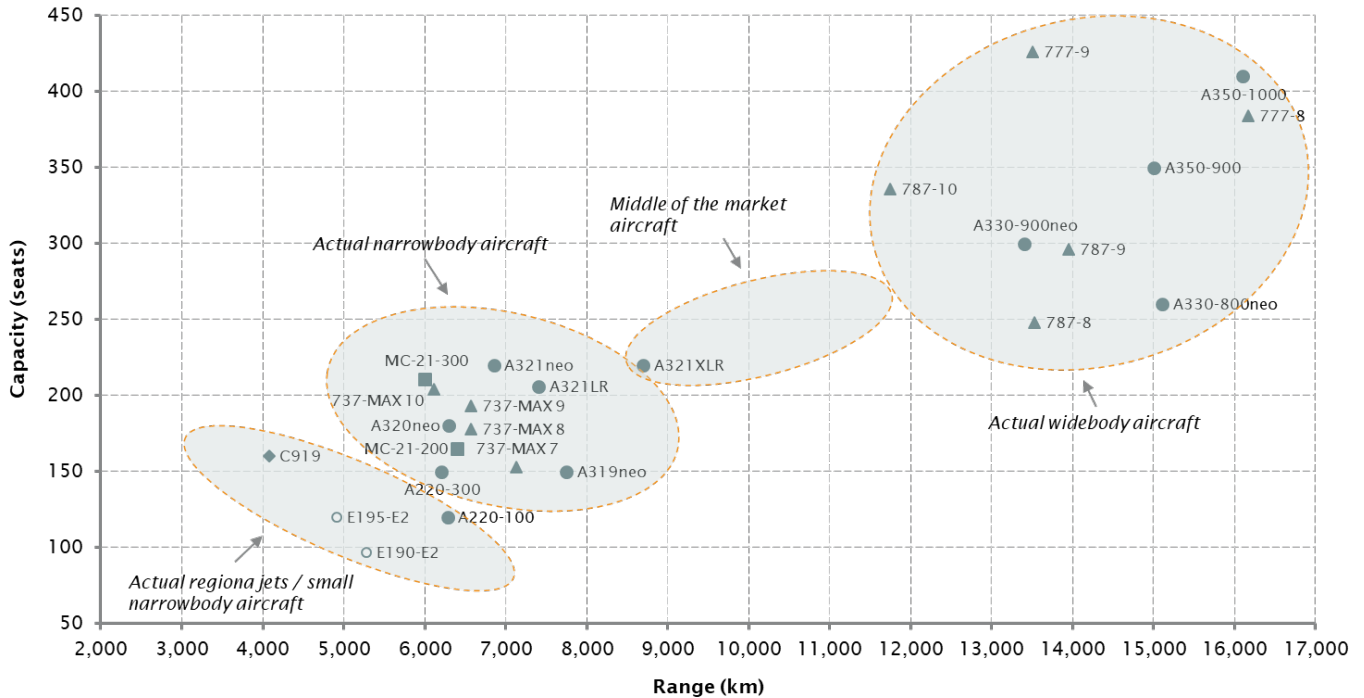
Airbus Core Invested Capital										
	2018	2019F	2020E	2021E	2022E	2023E	2024E	2025E	2030E	2035E
Operating Working Capital	-2,795	-1,424	-976	-270	128	293	351	275	-244	-385
<i>thereof Inventories</i>	<i>31,891</i>	<i>36,543</i>	<i>41,518</i>	<i>44,424</i>	<i>47,926</i>	<i>50,739</i>	<i>53,903</i>	<i>56,798</i>	<i>71,282</i>	<i>84,904</i>
<i>thereof Trade Receivables</i>	<i>6,078</i>	<i>6,708</i>	<i>7,389</i>	<i>7,774</i>	<i>8,283</i>	<i>8,725</i>	<i>9,226</i>	<i>9,705</i>	<i>12,164</i>	<i>14,383</i>
<i>thereof Trade Liabilities</i>	<i>-16,237</i>	<i>-17,816</i>	<i>-19,530</i>	<i>-20,461</i>	<i>-21,716</i>	<i>-22,798</i>	<i>-24,037</i>	<i>-25,221</i>	<i>-31,420</i>	<i>-37,101</i>
<i>thereof Customer Pre-payments</i>	<i>-26,229</i>	<i>-30,320</i>	<i>-33,663</i>	<i>-35,337</i>	<i>-37,723</i>	<i>-39,754</i>	<i>-42,150</i>	<i>-44,442</i>	<i>-55,825</i>	<i>-66,237</i>
<i>thereof Other</i>	<i>1,702</i>	<i>3,461</i>	<i>3,310</i>	<i>3,329</i>	<i>3,357</i>	<i>3,381</i>	<i>3,409</i>	<i>3,436</i>	<i>3,554</i>	<i>3,667</i>
Net Property, Plant, and Equipment	20,460	21,009	21,791	22,645	23,617	24,663	25,799	27,004	33,883	41,310
Other Assets Net of Other Liabilities	-15,379	-15,476	-15,612	-15,802	-15,974	-16,161	-16,343	-16,532	-17,528	-18,672
Less: Ongoing Operating Provisions	-2,302	-2,490	-2,675	-2,801	-2,954	-3,091	-3,240	-3,383	-4,202	-4,915
Value of Operating Leases	1,985	2,249	2,513	2,777	3,041	3,306	3,570	3,834	5,154	6,475
Goodwill & Intangibles	13,039	13,025	13,025	13,025	13,025	13,025	13,025	13,025	13,025	13,025
Cumulative Written Off & Amortized	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040
Op. Invested Capital	16,048	17,933	19,106	20,615	21,924	23,074	24,201	25,263	31,128	37,877
<i>Airbus Commercial Aircraft</i>	<i>13,299</i>	<i>14,555</i>	<i>15,705</i>	<i>17,158</i>	<i>18,442</i>	<i>19,575</i>	<i>20,619</i>	<i>21,578</i>	<i>26,953</i>	<i>32,915</i>
<i>Airbus Helicopter</i>	<i>135</i>	<i>319</i>	<i>273</i>	<i>244</i>	<i>217</i>	<i>198</i>	<i>181</i>	<i>169</i>	<i>144</i>	<i>192</i>
<i>Airbus Defence and Space</i>	<i>2,613</i>	<i>3,059</i>	<i>3,129</i>	<i>3,213</i>	<i>3,264</i>	<i>3,301</i>	<i>3,402</i>	<i>3,516</i>	<i>4,031</i>	<i>4,769</i>

Airbus Core Free Cash Flow										
	2018	2019F	2020E	2021E	2022E	2023E	2024E	2025E	2030E	2035E
EBITA	5,395	6,654	8,011	8,930	10,056	11,080	12,209	13,298	18,047	21,333
Adj. for Operating Leases	26	29	33	36	40	43	46	50	67	84
Adjusted EBITA	5,421	6,683	8,043	8,966	10,095	11,123	12,255	13,348	18,114	21,417
Taxes	-1,559	-1,886	-2,227	-2,434	-2,686	-2,900	-3,130	-3,337	-4,529	-5,354
NOPLAT	3,862	4,797	5,817	6,532	7,409	8,222	9,126	10,011	13,586	16,063
Depreciation	2,444	2,469	2,536	2,631	2,734	2,852	2,979	3,116	3,919	4,813
Operational Cash Flow	6,306	7,266	8,352	9,163	10,143	11,075	12,104	13,127	17,505	20,876
Increase in Working Capital	793	-1,371	-448	-706	-398	-166	-58	76	85	-11
Capital Expenditures	-2,285	-3,018	-3,318	-3,485	-3,707	-3,898	-4,115	-4,321	-5,373	-6,301
Increase in other operating assets / liabilities	-1,519	97	137	189	172	187	181	189	211	240
Increase in ongoing operating provisions	-63	188	184	127	153	138	149	142	156	138
Inv. in operating leases	-395	-264	-264	-264	-264	-264	-264	-264	-264	-264
Investment in goodwill	-3,898	14	0	0	0	0	0	0	0	0
Investment Cash Flow	-7,367	-4,354	-3,709	-4,139	-4,043	-4,002	-4,106	-4,177	-5,185	-6,199
Core Free Cash Flow	-1,061	2,912	4,643	5,024	6,100	7,072	7,998	8,950	12,320	14,677
<i>Airbus Commercial Aircraft</i>	<i>-2,448</i>	<i>2,601</i>	<i>3,636</i>	<i>3,969</i>	<i>4,928</i>	<i>5,808</i>	<i>6,712</i>	<i>7,595</i>	<i>10,606</i>	<i>12,795</i>
<i>Airbus Helicopter</i>	<i>462</i>	<i>158</i>	<i>425</i>	<i>438</i>	<i>467</i>	<i>492</i>	<i>522</i>	<i>551</i>	<i>675</i>	<i>758</i>
<i>Airbus Defence and Space</i>	<i>926</i>	<i>153</i>	<i>582</i>	<i>617</i>	<i>705</i>	<i>772</i>	<i>764</i>	<i>803</i>	<i>1,039</i>	<i>1,125</i>

Figure 2: Top 100 aircraft operators by fleet size. Source: planespotters.net

Top 100 aircraft operators by fleet size as of 01.12.2019													
Aircraft Operator	Airbus	Boeing	Embraer	Bombardier	Other	Fleet Size	Aircraft Operator	Airbus	Boeing	Embraer	Bombardier	Other	Fleet Size
Aegean Airlines	49	0	0	0	0	49	International Airlines Group	458	123	0	0	12	593
Aeroflot Group	166	131	0	0	59	356	Japan Airlines	4	169	0	0	0	173
Aerolineas Argentinas	12	44	0	0	0	56	JejuAir	0	46	0	0	0	46
Aeromexico	0	73	0	0	0	73	Jet2.com	1	91	0	0	0	92
Air Algérie	8	32	0	0	15	55	JetBlue	198	0	60	0	0	258
Air Asia Group	277	0	0	0	0	277	Juneyao	66	6	0	0	0	72
Air Canada	78	91	14	0	0	183	Korean Air	49	121	0	0	5	175
Air China Group	354	467	0	0	0	821	LATAM	253	77	0	0	0	330
Air Europa	11	33	11	0	7	62	Lion Air Group	54	188	0	0	80	322
Air France-KLM	159	269	92	25	3	548	LOT Polish Airlines	0	31	35	0	12	78
Air India	78	49	0	0	0	127	Lufthansa Group	576	68	43	35	41	763
Air New Zealand	35	30	0	0	23	88	Malaysia Aviation Group	36	48	0	0	23	107
Air Wisconsin	0	0	0	64	0	64	Mesa	0	0	60	85	0	145
AirArabia	55	0	0	0	0	55	Norwegian	0	156	0	0	0	156
Alaska Airlines	73	166	62	0	33	334	Oman Air	11	38	4	0	5	58
Alitalia	83	12	20	0	0	115	Pegasus Airlines	45	37	0	0	0	82
All Nippon Airways	28	209	0	0	0	237	Philippine Airlines	62	10	0	0	0	72
Allegiant Air	95	0	0	0	0	95	Piedmont	0	0	60	0	0	60
American Airlines Group	434	488	88	0	0	1,010	PSA Airlines	0	0	0	150	0	150
Asiana Airlines	57	29	0	0	0	86	Qantas Group	157	108	0	0	0	265
Avianca Holdings	126	14	0	0	15	155	Qatar Airways	123	110	0	0	0	233
Azul Linhas Aereas	45	2	59	0	33	139	Republic Airlines	0	0	198	0	0	198
Cathay Pacific	65	88	0	0	0	153	Royal Air Maroc	0	52	4	0	6	62
Cebu Pacific	54	0	0	0	20	74	Ryanair Holdings Group	23	450	0	0	0	473
China Airlines	37	51	0	0	0	88	S7 Group	60	23	17	0	0	100
China Eastern Airlines Group	386	337	3	0	0	726	SAS Group	71	53	0	25	9	158
China Southern Air Holding	371	462	21	0	0	854	Saudi Arabian Airlines	101	74	0	0	0	175
Compass Airlines	0	0	49	0	0	49	Sichuan	160	0	0	0	0	160
Copa Airlines	0	81	12	0	0	93	Singapore Airlines Group	113	105	0	0	0	218
Delta Air Lines Group	301	530	0	109	79	1,019	SkyWest	0	0	271	371	0	642
DHL	27	51	0	0	5	83	SmartWings Group	7	39	0	0	5	51
easyJet Group	332	0	0	0	0	332	South African Airways	48	2	0	0	0	50
EgyptAir	21	41	5	0	0	67	Southwest Airlines	0	748	0	0	0	748
Emirates Airline	114	155	0	0	0	269	SpiceJet	0	81	0	0	32	113
Ethiopian Airlines	13	80	0	0	27	120	Spirit Airlines	143	0	0	0	0	143
Etihad Airways	51	62	0	0	0	113	Spring Airlines	91	0	0	0	0	91
EVA Airways	34	47	0	0	2	83	TAP Air Portugal	86	0	13	0	8	107
FedEx Express	71	252	0	0	132	455	Thai Airways International	33	49	0	0	0	82
Finnair	59	0	12	0	0	71	TUI Group	5	140	4	0	0	149
flybe	0	0	12	0	61	73	Turkish Airlines	169	136	0	0	0	305
flydubai	0	55	0	0	0	55	United Airlines	179	611	0	0	0	790
Frontier Airlines	96	0	0	0	0	96	UPS	52	172	0	0	37	261
Garuda Indonesia	79	89	0	18	19	205	Ural Airlines	46	0	0	0	0	46
GoAir	55	0	0	0	0	55	UTair Aviation	0	49	0	0	15	64
GoJet	0	0	0	50	0	50	VietjetAir Group	79	0	0	0	0	79
Gol Transportes Aereos	0	135	0	0	0	135	Vietnam Airlines	85	14	0	0	1	100
Hainan Airlines Group	286	314	70	0	3	673	Virgin Australia Holdings	6	84	0	0	8	98
Hawaiian Airlines	40	20	0	0	0	60	Volaris	78	0	0	0	0	78
IndiGo	225	0	0	0	23	248	WestJet	0	124	0	0	0	124
Interjet	65	0	0	0	22	87	Wizz Air	120	0	0	0	0	120
Total	5,005	4,989	530	266	581	11,371	Total	3,848	4,433	769	666	299	10,015

Figure 3: 100+ passenger aircraft market overview. Source: Airburs, Boeing, COMAC, Embraer and Irkut



Disclosures and Disclaimers

Report Recommendations

Buy	Expected total return (including expected capital gains and expected dividend yield) of more than 10% over a 12-month period.
Hold	Expected total return (including expected capital gains and expected dividend yield) between 0% and 10% over a 12-month period.
Sell	Expected negative total return (including expected capital gains and expected dividend yield) over a 12-month period.

This report was prepared by Katharina Lindner and Jonas Hannig, Master in Finance students of Nova School of Business and Economics (“Nova SBE”), within the context of the Field Lab – Equity Research.

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This report was supervised by a Nova SBE faculty member, acting merely in an academic capacity, who revised the valuation methodology and the financial model.

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WTO Decision: To what extent is Airbus hurt?
An Analysis on the background of the WTO dispute and the impact on the company.

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Abstract

In this research paper the WTO dispute between Airbus and Boeing will be discussed and the impact on Airbus by the WTO's decision will be analysed. First, a brief overview about the background and development of the dispute at the WTO between Airbus and Boeing will be presented. In the following the trigger of this conflict – the subsidies – will be discussed. Consequently, this paper examines whether Airbus is the party most harmed by the tariffs that the United States imposed against imported goods from the European Union. In order to do so the share prices, order numbers, and future strategy of Airbus is be analysed.

Keywords

Airbus, WTO dispute, tariffs, subsidies

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1. History of Dispute & Background

The dispute between Airbus and Boeing has a long history, one could say that it has existed ever since Airbus was founded. Boeing had been the only big aircraft manufacturer for decades. To counter this market power European countries joined forces and founded Airbus.¹

The first dispute arose when Airbus built a single-aisle jet (A320) that directly competed with Boeing's 737. Although it was not the first time Airbus relied on state financing, it was the first time that the United States considered it problematic and trade distorting. In order to end the disputes over illegal subsidies, the EU and the US concluded the Large Civil Aircraft Agreement in 1992.² It regulated the level of financial support that companies were allowed to receive from governments. Direct subsidies to companies were limited to 33% of production costs and to an overall maximum of 4% of the companies' yearly turnover in commercial aviation. A precise limitation of indirect subsidies was never given.³ This agreement worked well for the two companies until 2004. During this period Airbus launched its new project the A380, a wide body aircraft that could have serious impacts on the demand of Boeing's 787 and the company's market leader position in the LCA sector.⁴ Thus, it can be assumed that an impending loss in market share was attributable to the US decision (urged by Boeing) to file a complaint with the WTO. By filing a complaint with the WTO for illegal subsidies in the aircraft industry, Boeing automatically terminated the LCA agreement of 1992.⁵ The EU (backed by Airbus) retaliated and filed a complaint about prohibited subsidies against the United States.⁶ The dispute settlements continued

¹ Çalışkan, Ö. (2010). An Analysis of the Airbus-Boeing Dispute From the Perspective of the WTO Process. *Ege Akademik Bakis (Ege Academic Review)*, 10(4), 1129–1129. doi: 10.21121/eab.2010419599

² The airbus-boeing dispute: Implications of the WTO boeing decision. (2010). *Intereconomics*, 45(5), 262–263. doi: 10.1007/s10272-010-0345-4

³ Wittig, S. (2011). The WTO Panel Report on Boeing subsidies: a critical assessment. *Intereconomics*, 46(3), 148–153. doi: 10.1007/s10272-011-0376-5

⁴ The airbus-boeing dispute: Implications of the WTO boeing decision. (2010). *Intereconomics*, 45(5), 262–263. doi: 10.1007/s10272-010-0345-4

⁵ Wittig, S. (2012). Luftfahrtindustrie: Implikationen der WTO-Berufungsentscheidungen für Airbus und Boeing. *Ifo Schnelldienst*, 65(7), 21–27.

⁶ Robertson, H. (2018). No Sign of Landing: Airbus, Boeing, the WTO, and the Expanding Large Civil Aircraft Battle. *SSRN Electronic Journal*. doi: 10.2139/ssrn.3114942

for years until decisions were made in May 2018⁷ respectively in March 2019.⁸(Appendix 1) The WTO sustained both complaints about illegal subsidies. On October 2nd, 2019, the WTO announced that the US were authorized biggest-ever granted tariffs on European exports valuing \$7.5 billion (yearly). As the case against the United States was filed at a later point, the EU is still waiting for the level of authorized tariffs on US goods.⁹

2. How was Airbus subsidized?

It has to be distinguished between direct and indirect subsidies. Direct research funding includes the “Framework Programmes for Research, Technological Development and Demonstration” (FRP) that are offered by the European Union. These programs are created to help companies at a pre-competitive stage. Airbus has been benefiting from these since 1998 (it can be assumed that the acquisition of McDonnell-Douglas by Boeing was the trigger). The funding was provided by Airbus’ consortium states (Germany, France, Spain and the United Kingdom) and by the European Investment Bank.¹⁰

The indirect subsidies consist of launch aid and infrastructure measures. The launch aid that Airbus receives is called ‘European Governments’ refundable advances’. It is a type of loan that has to be paid back with every plane the company sold, however, it only has to be paid back if a project was successful.¹¹ The infrastructure measures include for instance the support from municipalities. The city of Hamburg reclaimed land from Airbus and financed a factory expansion on this property which was then leased back to Airbus at a low rate.¹² Especially the indirect subsidies have become

⁷ dispute settlement - DS316: European Communities - Measures Affecting Trade in Large Civil Aircraft. (n.d.). Retrieved November 22, 2019, from https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds316_e.htm.

⁸ dispute settlement - DS353: United States - Measures Affecting Trade in Large Civil Aircraft □ Second Complaint. (n.d.). Retrieved November 22, 2019, from https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds353_e.htm.

⁹ Garten, J. E. (2005). The Big Blowout: Why the Airbus-Boeing case could wreck the WTO, and how to stop it. *Newsweek International*.

¹⁰ Maennig, W., & Wittig, S. (2010). WTO dispute settlement proceedings: European support for airbus in the spotlight. *Intereconomics*, 45(3), 180–187. doi: 10.1007/s10272-010-0334-7

¹¹ Annual Report Airbus 2018

¹² Maennig, W., & Wittig, S. (2010). WTO dispute settlement proceedings: European support for airbus in the spotlight. *Intereconomics*, 45(3), 180–187. doi: 10.1007/s10272-010-0334-7

a point of contention between Airbus and Boeing as they are non-transparent and not easy to track. The indirect financing was primarily listed in the complaint filed by the United States with the WTO.¹³

3. To what extent is Airbus hurt by the tariffs?

When the WTO announced the authorisation of tariffs against European exports to the United States, it did not specify the products or their amount. This compensation for illegal state aid took effect on October 18th and concerned first of all the export of fully assembled aircraft, but with a moderate import duty of 10%. Yet, these tariffs can be raised up to 100% at any time.

Airbus serves the American market partly by a production facility in Mobile, Alabama. This will allow the company to avoid some of the penalty duties as they only concern fully assembled aircraft. The A320 and A220 aircraft are manufactured in this plant.¹⁴ However, with an output rate of 4-5 aircraft per month this corresponds to a maximum of 60 produced A320s. Currently, there are 670 orders from US airlines for the A320 aircraft. The fact that the demand cannot be fully satisfied by the production plant in Mobile leads to another party affected by the punitive tariffs: the US airlines. Due to the high order numbers fully assembled aircraft must be imported to meet delivery dates.¹⁵ Airbus is covering parts of the tariffs at the moment, but it will pass on the higher costs to their customers by mid 2020.¹⁶ Considering the average price for the A321 amounts to \$130 million, 10% of the total orders right now (399 units) would result in \$5.7 billion of extra costs for the Airlines.¹⁷ Initially, the tariffs appeared to be detrimental for Airbus. Yet, they have not hit the company hard as far as one can tell now. Neither the market nor the customers

¹³ https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds316_e.htm

¹⁴ Flottau, J. (2019, January 22). Trotzreaktion. Retrieved November 22, 2019, from <https://www.sueddeutsche.de/wirtschaft/airbus-trotzreaktion-1.4295178>.

¹⁵ US-Produktion von Airbus zunächst von Strafzöllen ausgenommen. (n.d.). Retrieved November 22, 2019, from <https://www.airliners.de/wto-us-strafzoelle-airbus-flugzeuge-produktion-mobile/52262>.

¹⁶ Kaminski-Morrow, D. (2019, October 30). Airbus starts to feel deliveries impact from WTO dispute. Retrieved November 22, 2019, from <https://www.flightglobal.com/news/articles/airbus-starts-to-feel-deliveries-impact-from-wto-dis-461885/>.

¹⁷ Airbus Total Orders and Deliveries: October 2019

were scarred off when the WTO sustained the US complaint about illegal subsidies in May 2018. (Appendix 2) Also, on October 2nd, 2019 the day of the announcement of the export volume that will be hit by punitive tariffs the Airbus share closed at -2.04%, but closed at +4.86% the following day. Since then, the share price has risen steadily.¹⁸ (Appendix 3) Also, Airbus' customers have not been scarred off. The order numbers in North America remained constant compared to the previous year.¹⁹ In the first nine months of 2019, 53 A321 neo and 23 A320 neo were ordered.²⁰ This shows that clients continued to order Airbus aircraft after May 2018 already knowing the US were allowed to impose tariffs on European goods at a later point in time. (Table 1)

4. Conclusion

The consequences for Airbus by the US tariffs are moderate so far. However, the threat that these duties can be raised to a 100% at any time presents a great insecurity, as the company's long-term strategy for the North American market could have to change from one day to another.

Also, once the US extends the tariffs including aircraft parts Airbus will not benefit from its manufacturing plant anymore. The company will start to struggle, as Airlines might overthink their order strategy to avoid those high extra costs. Yet, it is unlikely these will increase in the near future, as tariffs are as well going to be imposed on US goods. The industry is too important for both sides, therefore it can be expected that tariffs are going to be imposed on a "live and let live" basis. At the moment, it can be stated that Airbus is not hit as hard by the tariffs as previously expected, the company's share price is rising and the order figures in the US market are increasing, only the tariffs that Airbus shares with its US clients at the moment present a negative impact.

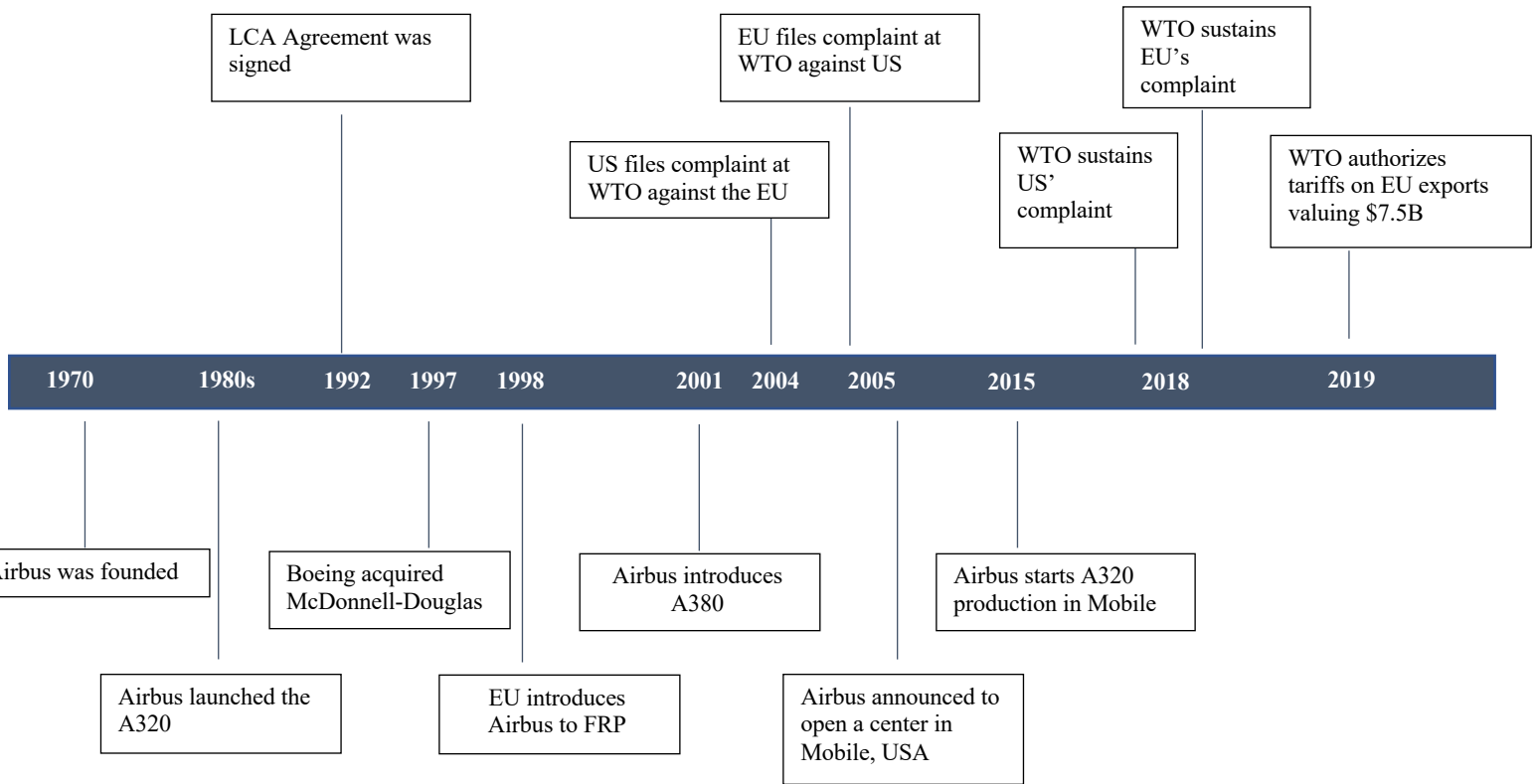
¹⁸ Thomson Reuters Eikon

¹⁹ Due to a lack of data, only the results of October 2019 can be compared to those of December 2018.

²⁰ Airbus Orders and Deliveries: December 2018, October 2019

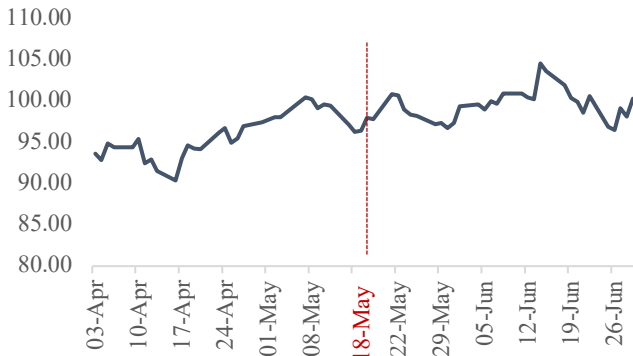
Appendix 1)

Timeline of the WTO dispute between Airbus and Boeing



Appendix 2)

WTO rules that Airbus used illegal subsidies (2018)



Appendix 3)

WTO authorises tariffs (2019)

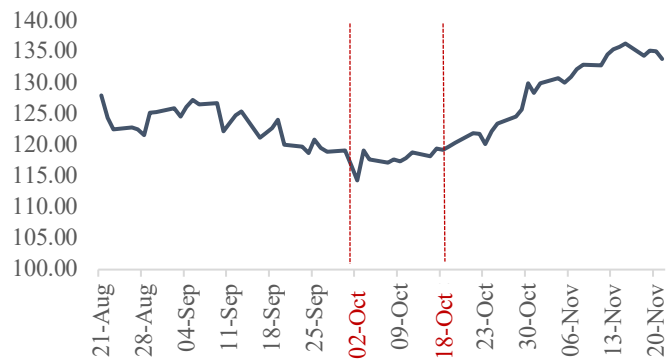


Table 1)

Comparison of US Order Numbers in 2018 and 2019

	2018				2019				Increase (Decrease)			
	A320ceo	A320neo	A321ceo	A321neo	A320ceo	A320neo	A321ceo	A321neo	A320ceo	A320neo	A321ceo	A321neo
Total Orders	480	253	439	335	480	220	439	388	0	(33)	0	53
Total Deliveries	477	31	377	9	480	47	407	25	3	16	30	16
Aircraft in fleet	569	44	426	19	584	63	463	39	15	19	37	20
									Increase A320	20	Increase A321	156